EUB Alberta Energy and Utilities Board

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# Directive 065

**Revised edition July 3, 2007**

## Resources Applications for Conventional Oil and Gas Reservoirs

The Alberta Energy and Utilities Board (EUB/Board) has approved this directive on July 3, 2007.

B. T. McManus, Q.C.
Acting Chairman

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## How to Use This Directive

*Directive 065* simplifies the process to apply to the Alberta Energy and Utilities Board (EUB) for all necessary approvals to establish the strategy and plan to deplete a pool or portion of a pool using one resource application. Previously, the requirements were mainly found in Part 15 of the *Oil and Gas Conservation Regulations*.

This directive also enables you to review in a single document the application requirements and the explanations for those requirements for most conventional oil and gas reservoir topics considered in an application for EUB approval. "Must" indicates a requirement for which compliance is required and is subject to EUB enforcement, while "recommends" indicates a best practice that can be used but is not an EUB requirement and does not carry an enforcement consequence. The EUB will conduct periodic reviews of this directive's continued usefulness for applicants and conduct updates based on feedback received and re-engineering reviews.

The modifications and new requirements in this July 2007 edition are effective July 3, 2007.

### Introduction

Specific resource applications are required to allow the EUB and potentially affected parties, often with competing interests, to understand and test the appropriateness or impact of depletion plans at critical milestones. Other resource applications may address revisions to the baseline set of depletion or equity rules and reservoir descriptions. Finally, some resource applications address known equity disputes arising from different ownership, limited opportunity to produce, or access constraints to established facilities. If such issues are not resolved, these applications go directly to a hearing.

The EUB reviews all resource applications to ensure that the appropriate level of reservoir engineering and geological science is applied in managing poolwide depletion and that potential impacts on other stakeholders are identified and dealt with fairly. Because individual reservoirs are unique, detailed assessments may be necessary to ensure that the depletion plan is appropriate and recovery is in the public interest. You must provide sufficient up-front information and analysis to support the reasonableness of your proposals.

The EUB has compiled this comprehensive directive to support a level playing field for all applicants. Applicants are expected to know and understand requirements and file accurate and complete applications. EUB staff will not complete missing application requirements, such as raw data collection and supporting analytical discussion. Instead, EUB staff will test assumptions, check completeness and accuracy of data and assessments, and test alternatives.

### What This Directive Contains

This directive includes Schedule 1: Resources Applications registration form, guidelines on notification requirements, and six units that address detailed information requirements for specific regulatory topics, as well as appendices giving reference sources and other support information.

Applicants must prepare the following resources applications using *Directive 065*. A Schedule 1 form must accompany these applications to provide the EUB with key information about the applicant, the type of application, the area of application, and details of notice to potentially affected parties undertaken by the applicant.

The resources applications for which this directive applies are divided into units as follows:

1) **Equity**: rateable take, common purchaser, common carrier, common processor, compulsory pooling, and special spacing
2) **Conservation**: enhanced recovery scheme (gas cycling, waterflood, immiscible gas flood, miscible flood), concurrent production, and pool delineation and ultimate reserves
3) **Production Control**: commingled production, good production practice (primary depletion pools), gas-oil ratio penalty relief, special maximum rate limitation, and gas allowable
4) **Disposal/Storage**: disposal (water and waste), acid gas disposal, and underground gas storage
5) **Corporate Changes**: change in name of the holder of an EUB approval and change in holder of an EUB approval
6) **Gas and Ethane Removal**: short and long-term natural gas removal, short-term ethane removal.

The appendices include

- list of references
- notification templates
- Application for Gas-Oil Ratio Penalty Relief (Form O-33)
- Transfer of Approval form
- list of EUB contacts
- Enhanced Recovery Scheme application form
- gas and ethane removal application forms
- Gas Reserves Data Sheet

You are strongly encouraged to become familiar with the references listed in Appendix A before completing your applications.

### What's New in *Directive 065*

The July 2007 edition of *Directive 065*

- incorporates additional updated references to *Directive 019: EUB Compliance Assurance—Enforcement* (this section, page 6), and
- amended requirements for commingling applications (Section 3.1).

All other sections remain as in the January 2007 edition.

This directive supersedes and rescinds *Interim Directive (ID) 2000-05: Resources Applications Guide for Conventional Oil and Gas Resources*.

## Procedure for Reviewing Application

Figure 1 shows the overall oil and gas resources applications process, Figure 2 shows the oil and gas resources applications evaluation process, and Figure 3 shows well spacing applications evaluation.

### Step 1: Application Registration

You must submit three copies of the application package, including Schedule 1, unless otherwise specified in individual units of this directive. For data retention purposes, please provide Schedule 1 printed on one side only. Send the application to the Alberta Energy and Utilities Board, Resources Applications Group, 640 – 5 Avenue SW, Calgary, Alberta T2P 3G4. If the application proceeds to a hearing or is otherwise complex, you may be asked to provide as many as 19 additional copies. Applicants are referred to the EUB's *Rules of Practice* for additional information.

The EUB assigns each application package a unique application number. Applicants are encouraged to confirm the registration of their application by checking the Integrated Application Registry (IAR), accessible from the Applications page on the EUB's Web site www.eub.ca.

Note that all data must be submitted using metric units (SI).

### Step 2: Corporate Record Check

All applications are subject to a corporate check to verify acceptable performance records and other information in EUB files.

Applicants seeking formal approval must hold a valid company code issued by the EUB's Corporate Compliance Group. If you are a first-time applicant, you must obtain a company code by filing a corporate profile with the EUB's Corporate Compliance Group. Information packages are available from the Corporate Compliance Group at (403) 297-8320. You must update your corporate profile when asked to do so by the EUB.

EUB approvals identify the applicant as the holder of the approval, and this party is responsible and accountable for compliance with all regulations and the approval conditions. Applicants requesting changes to a general order of the EUB, reservoir description, and operational practices not requiring a change to an approval do not need to have a company code but must have a valid interest in the pool.

If you are on "refer" status due to an unresolved serious noncompliance problem, the EUB may ask additional questions, including questions related to corporate accountability, technical competency, and corporate commitment to compliance with provincial standards, as part of the EUB enforcement policy detailed in *Directive 019: EUB Compliance Assurance—Enforcement*. In the case of a "refer" status, EUB Board members are directly involved in the consideration of any application, which may include a decision to go to a hearing. Otherwise, the application is normally reviewed and, if appropriate, approved by the delegated work groups within the EUB.

### Step 3: Application Returned or Delayed if Incomplete

Effective October 1, 2000, the EUB will no longer process an application identified in this directive if it is substantially incomplete (i.e., has a major deficiency). It will be returned to you with an explanation. An example of such a major deficiency is the complete omission of an entire key information segment of any unit requirements, such as the geological description. If the application has minor deficiencies, such as lacking specific
information needed to make a decision, you will be provided with a clear explanation and given 5 working days to respond. Failure to respond in this time frame will result in the EUB closing and returning your application with written notification of the reason. The EUB is prepared to correct small errors in the submitted information, as long as applicants show improvement in submitting better-quality applications.

Note that if the EUB returns a severely deficient and incomplete application that you filed in response to an EUB request, such as for improvement in recovery or operational performance, you will be subject to any consequences or penalties previously identified at the time of the request.

### Step 4: Application Evaluation

This directive identifies some circumstances that may reduce application requirements and, in turn, result in a faster decision on the application. You may want to consider the long-term benefits of creating some of these circumstances, such as equity agreements and poolwide plans, before you file a competitive, partial pool application.

The evaluation of your application may also be expedited if your definition of the pool extent is consistent with the EUB's pool designation or you provide a discussion on any variances. Resolving significant differences, such as pool delineation, once the application is filed could add considerable time to the application process and raise issues that are better dealt with beforehand.

When evaluating an application, the EUB reviews a pool's unique features, if any, to assess whether additional information, analysis, or consultation beyond what is identified in the directive is required. As explained in the Resources Applications Notification Guidelines and individual units of this guide, in those cases where the applicant has chosen to conduct notification the EUB will require submission of documentation describing your notification program. The EUB will review this evidence, especially the written notice or other correspondence, showing that you have contacted all potentially affected parties and provided them with a fair opportunity to learn about your planned application and to submit their views to you and the EUB. Signed letters of nonobjection are preferred in this regard, but the EUB will also consider other evidence and explanations of your efforts to address notification within a reasonable time period.

## Objections/Dispute Resolution

The EUB expects applicants to conscientiously address all relevant concerns raised by potentially adversely affected parties. Should disputes arise, the EUB expects the parties to discuss the issues and options for resolution, including the use of third-party mediators. EUB staff, if requested, can assist in explaining EUB rules and in facilitation.

If you conclude that further discussion is unlikely to resolve issues, you should inform the EUB, outlining concerns, steps you have taken to resolve problems, and your recommended course of action. Note that outstanding objections can result in an EUB hearing. Should a hearing be called, both you and the intervener might be asked to file additional substantiating evidence. Matters of confidentiality and disclosure should be addressed and determined by the parties prior to submission of the evidence.

### Documented Decisions/Compliance

EUB decisions on the resource applications listed in this directive are issued in written format and generally include a letter and either a formal site-specific approval or a regional or provincial order.

EUB requirements for resource activities covered by *Directive 065* are set out in the *Oil and Gas Conservation Act*, *Oil and Gas Conservation Regulations*, this directive, and conditions of approval. These are the requirements that you have a legal obligation to meet and against which the EUB may take enforcement action in cases of noncompliance.

You must not assume that an approval has or will be granted just because an application has been submitted.

If an unauthorized activity occurs or if conditions of approval are not met, enforcement action will be taken in accordance with *Directive 019*. Immediate corrective action, such as the shut-in of well operations, is required. See specific sections of *Directive 065* for details of compliance requirements and enforcement action.

The enforcement process is explained in *Directive 019*, and a list of risk-assessed noncompliance events and associated compliance categories are listed on the EUB Web site www.eub.ca under EUB Home : Industry Zone : Compliance and Enforcement : Risk Assessed Noncompliance.

### Voluntary Self-Disclosure

Licensees are encouraged to actively monitor compliance using tools such as surveillance and audits. Rules for voluntary self-disclosure and a list of events that are not considered self-disclosure are listed in *Directive 019*. Send self-disclosure information to

E-mail: *EUB.ResourceCompliance@EUB.ca*
Fax: (403) 297-8122
Mail: Alberta Energy and Utilities Board
Resources Applications, Enforcement and Surveillance Section
640 – 5 Avenue SW
Calgary, Alberta T2P 3G4

**Figure 1. Resources Applications Process**

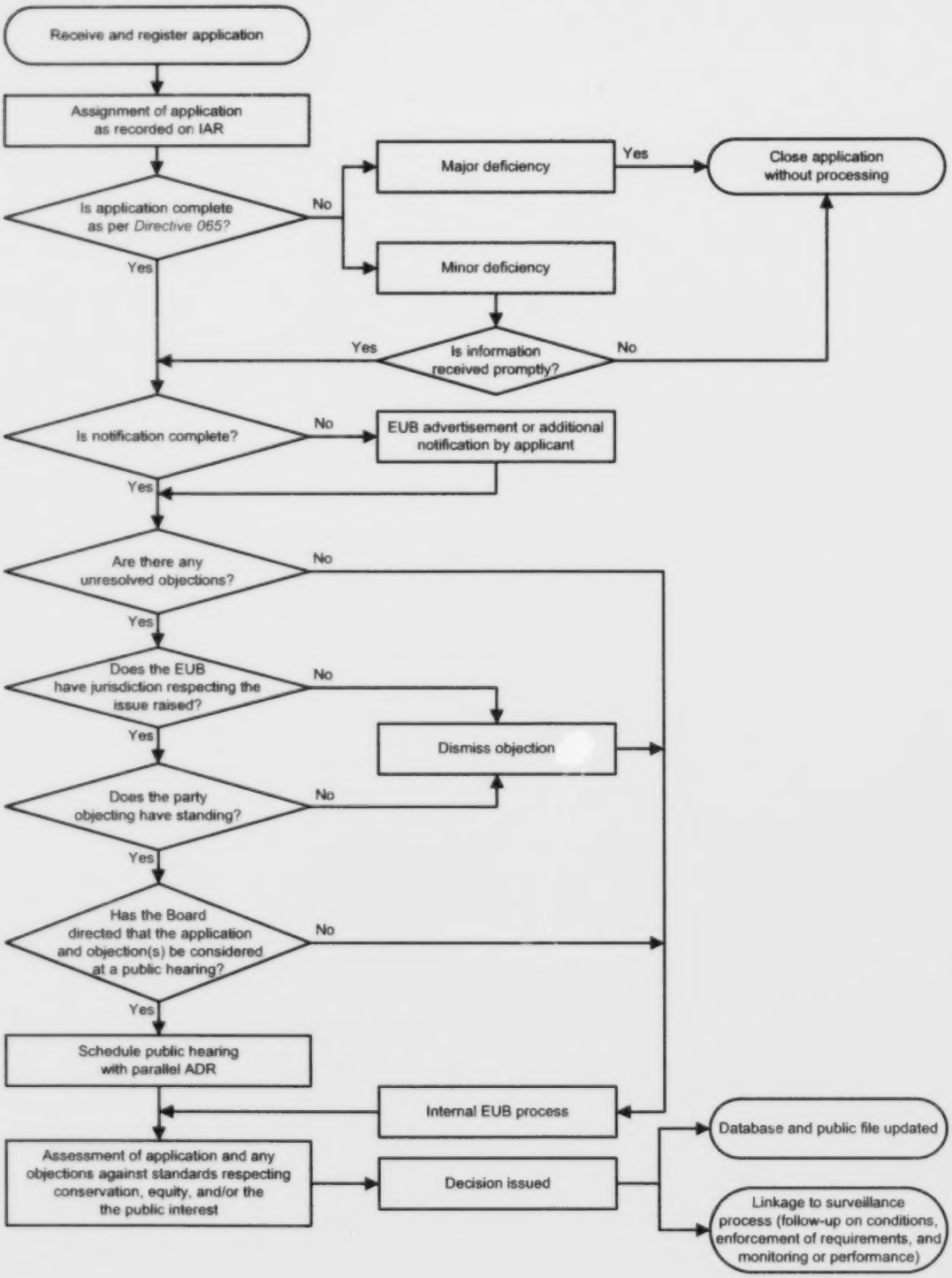


**Figure 2. Resources Applications Evaluation**

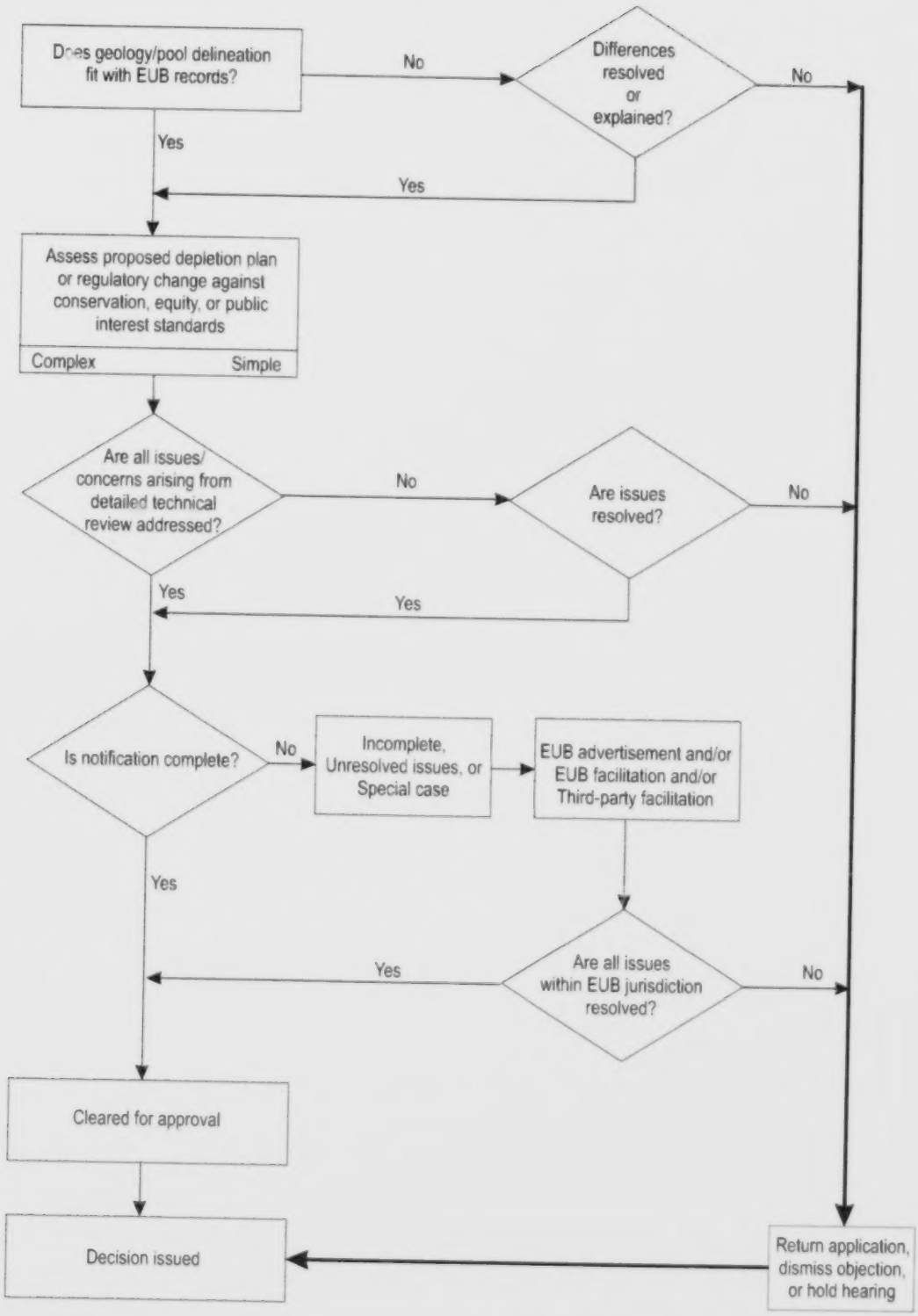
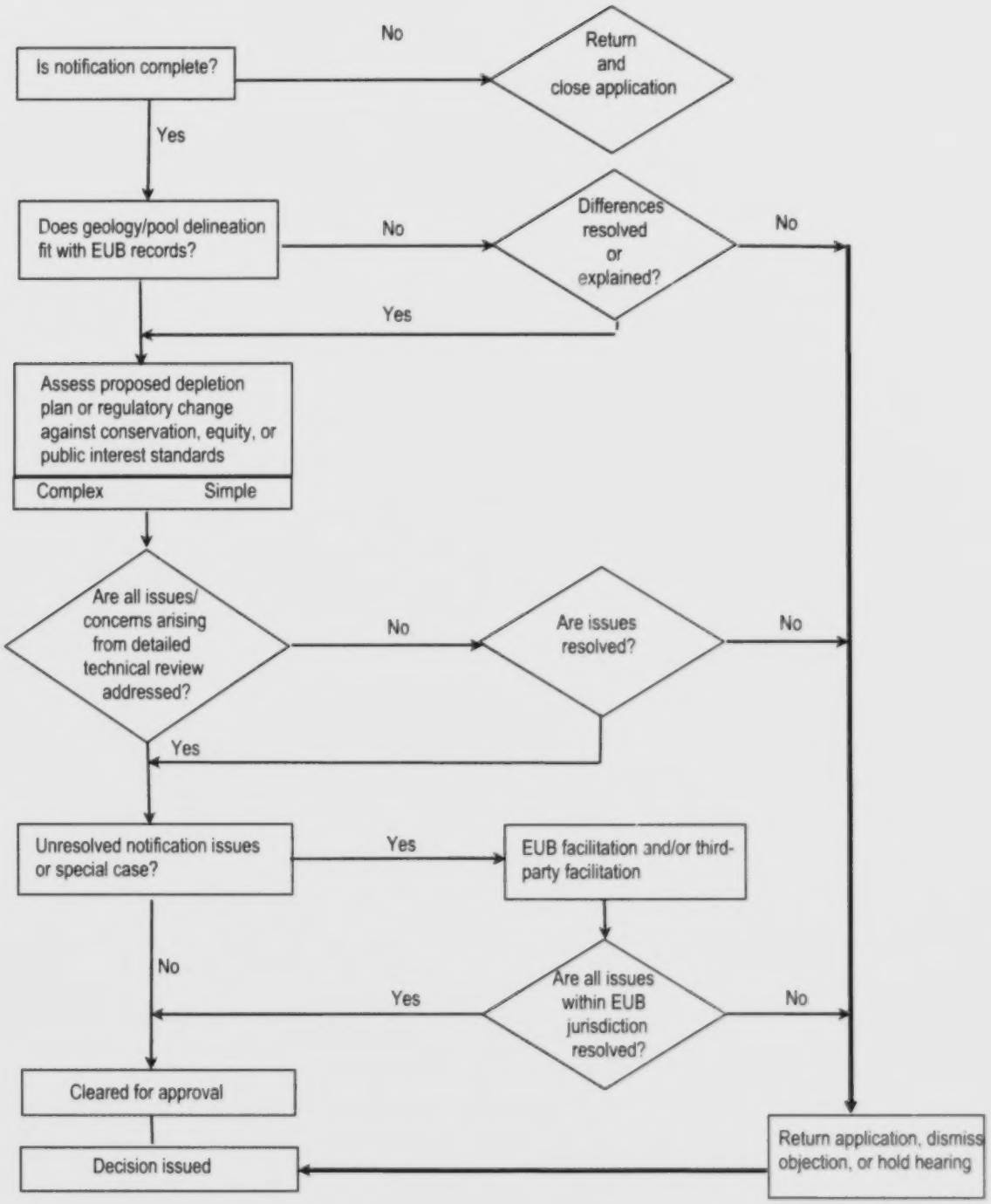


***Figure 3. Well Spacing Applications Evaluation***



EUB Alberta Energy and Utilities Board

# Directive 065 – Schedule 1
# Resources Applications

## 1. REGISTRATION

Month ___ Day ___ Year ___ Applicant's File Number _____

EUB USE ONLY

Registration Number: _____ Registration Date: Month ___ Day ___ Year __

Company Name _____ Company Code _____

Contact Person (N/A ☐) _____ _____
Last Name First Name

Telephone _____ Fax _____

E-mail Address _____

Consultant (N/A ☐) _____ _____
Company Name Consultant Code

Consultant Contact Person _____ _____
Last Name First Name

Telephone _____ Fax _____

E-mail Address _____

## 2. BASIC INFORMATION REQUIREMENTS

1. Field, Strike Area, and Pool

| Field Code No./Name | Strike Area Name | Pool Code No./Name |
|---|---|---|
| | | |

2. What is the ownership basis on which you make this application?

3. Have you completed the notification requirements? Yes ☐ No ☐

4a. Do you need EUB assistance to complete the notification requirements? Yes ☐ No ☐ If Yes, please supply details.

4b. Are there outstanding concerns? Yes ☐ No ☐

5. Does your injectant contain hydrogen sulphide ($H_2S$)? Yes ☐ No ☐

5a. If Yes, is a new emergency response plan (ERP) needed, or does an existing ERP need updating? Yes ☐ No ☐

5b. If No, state why not _____

5c. If Yes, supply details _____

*(continued on next page)*

Company Name _____

5d. Have you conducted notification for ERP purposes to all potentially affected parties? Yes ☐ No ☐

5e. If Yes, are there any outstanding concerns?

_____

_____

6. Are you applying to amend an existing approval or order? Yes ☐ No ☐

_____

_____

6a. If Yes, what is the existing approval or order number? _____

6b. Is the name of the approval holder current? Yes ☐ No ☐

## 3. TYPES OF APPLICATIONS

1. What types of resources applications are you submitting at this time?

**UNIT 1 - EQUITY**

- ☐ Rateable Take (1.1)
- ☐ Common Purchaser (1.2)
- ☐ Common Carrier (1.3)
- ☐ Common Processor (1.4)
- ☐ Compulsory Pooling (1.5)
- ☐ Special Spacing (1.6)

**UNIT 2 - CONSERVATION**

- ☐ Enhanced Recovery Scheme (2.1)
- ☐ Concurrent Production (2.4)
- ☐ Pool Delineation and Ultimate Reserves (2.5)

**UNIT 3 - PRODUCTION CONTROL**

- ☐ Commingled Production (3.1)
- ☐ Good Production Practice (Primary Depletion Pool) (3.2.2)
- ☐ Gas-Oil Ratio Penalty Relief (3.2.3)
- ☐ Special Maximum Rate Limitation (3.2.4)
- ☐ Gas Allowable (3.3)

**UNIT 4 - DISPOSAL/STORAGE**

- ☐ Disposal (Class I-IV) (4.1)
- ☐ Acid Gas Disposal (4.2)
- ☐ Underground Gas Storage (4.3)

**UNIT 5 - CORPORATE CHANGES**

- ☐ Change in Name of Approval Holder (5.1)
- ☐ Change of Holder of Approval (5.2)

**UNIT 6 – GAS AND ETHANE REMOVAL**

- ☐ Short-Term Gas Removal (6.3.1)
- ☐ Long-Term Gas Removal (6.3.2)
- ☐ Short-Term Ethane Removal (6.3.3)

## 4. FUTURE APPLICATIONS

1. Do you plan to submit subsequent applications associated with the present applications to the EUB within six months?
   Yes ☐ No ☐
2. If Yes, state what types and when you plan to submit these applications.

_____

_____

_____

**Note:** Remember to file three copies of the application package, including Schedule 1, unless otherwise specified in individual units of this directive.

**SUBMIT APPLICATIONS TO**

**Alberta Energy and Utilities Board**
**Resources Applications Group**
**640- 5 Avenue SW**
**Calgary, Alberta T2P 3G4**

## Schedule 1 Guide

**When to Use Schedule 1**

Schedule 1 is required for all applications contained in *Directive 065*. It provides registration information, along with the identification of application type and key items that should be addressed prior to proceeding with the resources applications.

### Part 1: Registration

**Date**

In the upper left-hand corner, enter the date on which you will submit this application to the EUB.

**Applicant's File Number (Optional)**

Enter your own file number, if desired, in the upper right-hand corner.

**Company Name**

Enter your company name.

As applicant, your company is legally responsible for the accuracy and completeness of this application and all supporting technical information. Upon approval, the company becomes the approval holder or is subject to the conditions set out in an EUB order, such as the Monthly MRL Order, and bears the responsibility for implementation, operations, and compliance.

**Company Code**

Enter your assigned four-digit company code.

If no code has been assigned, contact the EUB Corporate Compliance Group to obtain your code before submitting any application.

**Contact Person**

Enter the name (last name first) of the person authorized by your company to be responsible for this application and to act on your company's behalf. If a consultant is acting on the company's behalf, check N/A.

The EUB will consider the action and decisions of this individual to be the actions and decisions of your company.

Any EUB approval, permit, or order resulting from this application will be issued in the company's name and sent to the contact person.

**Telephone/Fax**

Enter the business telephone number and facsimile number of the contact person, including area code.

**E-mail Address**

Enter the e-mail address of the contact person, if available.

**Consultant**

Enter the company name of the consultant submitting an application on the company's behalf. If a consultant is not being used, check N/A.

A consultant is a person or corporation retained by the applicant to prepare the application. The EUB considers the applicant to be legally responsible for the accuracy and completeness of the application even when it is submitted on the applicant's behalf by the consultant.

**Consultant Code**

Enter the consultant's four-digit code.

If no code has been assigned, contact the EUB Corporate Compliance Group. (The EUB does not keep corporate compliance records for consultants unless they are licensee, permit, or approval holders.)

**Consultant Contact Person**

Enter the name of the person at the consulting company responsible for preparing this application. The EUB will direct correspondence and questions about the application to this person.

Any EUB approval, order, or letter of approval resulting from this application will be issued in the applicant's name and mailed to the consultant's contact person.

**Telephone/Fax**

Enter the business telephone number and facsimile number of the consultant's contact person, including area code.

This person must ensure that the applicant receives a copy of the approval, order, or letter of approval.

**E-mail Address**

Enter the e-mail address of the contact person, if available.

## Part 2: Basic Information Requirements

**1. Field, Strike Area, and Pool Code Numbers and Names**

Enter the assigned four-digit field code and the seven-digit pool code (as applicable) and the field, strike, and pool names that are assigned by the EUB.

You may obtain your field and pool code from *ST103*.

**2. What is the ownership basis on which you make this application?**

State your qualification as an applicant, specifying business links and relationship to other owners in the area of application. Those qualified to make an application include a recognized representative who has direct interest in the proposed application type or is an affected party (e.g., a unit operator, holder of an approval, well licensee, lessee, or lessor of undrilled land).

**3. Have you completed the notification requirements?**

Check **Yes** if you have met the notification requirements outlined in the Resources Applications Notification Guidelines, Tables 1 and 2, and in the individual units of this directive. Please submit documentation describing your notification program.

Check **No** if you have not completed these requirements and provide an explanation as to why not.

Each unit in *Directive 065* describes the minimum notification requirements for a particular application. These are all summarized in Tables 1 and 2. As a minimum, you must complete the notification requirements in Table 1 prior to filing certain types of applications. For the application types listed in Table 2, you are strongly encouraged to complete notification prior to filing your application.

You must also consider whether unique situations exist that warrant additional notice. When the EUB reviews your application, it will also assess any unusual aspects that might increase notification requirements. The EUB also may serve formal notification if the project scope or location requires additional steps to ensure compliance with Section 29 of the *Energy Resources Conservation Act*.

**4a. Do you need EUB assistance to complete the notification requirements?**

Check **Yes** if you do require EUB assistance.
If not, check **No**.

The EUB may serve formal notification for resources applications if applicants are unable to initiate contact or complete notification in accordance with Section 29 of the *ERCA*. You must, however, provide complete lists of potentially adversely affected parties and their addresses, as detailed in Tables 1 and 2 of the Resources Applications Notification Guidelines. You might opt to have the EUB conduct the notification if the scope or number of parties is large. This does not remove the need for you to conduct meaningful consultation with any party identifying concerns. You will assume advertisement costs and can expect process delays of up to three or four weeks if the EUB conducts notification.

**4b. Are there outstanding concerns?**

If you answer **Yes** to the question of outstanding concerns or objections, you must include a detailed explanation of the concerns, a summary of your efforts to resolve the problem, and the alternatives reviewed.

**5. Does your injectant contain hydrogen sulphide ($H_2S$)?**

Check the appropriate box.

| | |
|---|---|
| **5a. If Yes, is a new ERP needed or does an existing ERP need updating?**<br><br>**5b. If No, state why not.**<br><br>**5c. If Yes, supply details.** | If $H_2S$ is being injected, an emergency response plan (ERP) may be required by the EUB's Operations Group before injection commences. If a new ERP or updated ERP has already been approved, you should provide the details. |
| **5d. Have you conducted notification for ERP purposes to all potentially adversely affected parties?**<br><br>**5e. If Yes, are there any outstanding concerns?** | Check the appropriate box. |
| **6. Are you applying to amend an existing approval or order?** | Check the appropriate box.<br><br>This applies only to changes to an existing approval or order that has been issued in a company's name. |
| **6a. If Yes, what is the existing approval or order number?** | If **Yes**, enter the number of the existing approval (four digits) or order (five digits) that the application applies to. |
| **6b. Is the name of the approval holder current?** | Check the appropriate box.<br><br>If **No**, review Unit 5 and Appendix D in this directive. Appendix D is a transfer of approval form, which you may complete and submit with your application. |

## Part 3: Types of Applications

| | |
|---|---|
| **1. What types of resources applications are you submitting at this time?** | Check the boxes under Units 1-5 for the related types of applications that you are submitting for EUB review and approval. For example, a spacing and an enhanced recovery scheme application to account for the desired injection pattern may be submitted as one package.<br><br>Review the individual unit sections cited in Schedule 1 to determine the information requirements and any technical reports that you must provide to support each application. |

## Part 4: Future Applications

| | |
|---|---|
| **1. Do you plan to submit subsequent applications associated with the present applications to the EUB within six months?** | Check the appropriate box.<br><br>The EUB uses this information for coordinating internal business practices, and it may assist the EUB in understanding the pool depletion strategy. |
| **2. If Yes, state what types and when you plan to submit these applications.** | |

## Resources Applications Notification Guidelines

### When to Notify

Effective notification and consultation programs are critical not only to ensure an efficient regulatory process but to promote long-term relationships. The EUB prefers, and requires for some resource application types, that both industry and public (where required) notification be completed prior to the filing of the applications.

### Whom to Notify

Minimum notification requirements for specific types of resources applications are included in Tables 1 and 2 of this section. In addition to meeting the minimum notification requirements, the EUB expects you to review your situation and consider whether there are potentially directly and adversely affected parties outside the minimum notification areas and, if so, also provide notification to these parties.

In some cases, the EUB requires notification for informational purposes only. This type of notification provides information regarding a potential development to support, promote, and encourage early and ongoing discussions between persons.

### How to Conduct Notification

Notification is the first step in providing information and is usually conducted through written correspondence, while consultation must occur face to face or by telephone. Early, proactive notification programs are more likely to result in positive relationships. To this end, the EUB believes that newspaper advertisement does not meet these objectives and should only be used to supplement direct notification in extenuating circumstances. If you know there will be contentious or complex issues respecting a resources application, personal consultation may be preferable as a first step rather than notification. Notification programs that do not provide for direct notice to a person should be discussed with the EUB prior to conducting the program.

You should provide notification of a proposed application by means of a letter that includes adequate information to allow persons to understand the proposed development and the impact it may have on them. Formats for notification letters are included in Appendix B. Notification must take into consideration whether the person being notified is an oil and gas company, a Freehold mineral owner, or a landowner or occupant. You must include applicant contact information in the notification letter, as well as directions about what action persons should take if there is a concern. In all cases, persons should be directed to submit any concerns directly to the applicant, not to the EUB.

In providing notification, you must take possible delays in delivery of the notification package into consideration. Each person notified must be given a minimum of 15 working days from the date the letter is mailed to respond. A signed letter of consent or nonobjection to the proposal is not required. However, it should be clear in the letter that if the person notified does not respond to the notification package, filing (if not filed) and processing of the application with the EUB will proceed without further contact.

### Consequences of Incomplete Notification

Generally, EUB staff follow the requirements of each application unit to determine whether a notification program meets the requirements of Section 26 of the *Energy Resources Conservation Act* (*ERCA*). This section requires the EUB to ensure that all potentially directly and adversely affected persons are given notice of an application and have a reasonable opportunity to make representations to the EUB regarding the application.

For some application types, the EUB requires that you provide a description of your notification program and documented evidence of the results in your application, including a list of the persons notified and a copy of the notification letter.

The EUB will review your notification information to ensure that you have met the requirements in this directive. Should it be determined that inadequate notification was provided or that not all potentially directly and adversely affected persons were notified, the application in most cases will be **closed**.

If an application has been approved, an affected person who was not notified may file an application for review under Section 39 or 40 of the *ERCA* requesting that the approval be reviewed. If the EUB grants the review application, a hearing will be scheduled. The approval may be suspended pending the outcome of the review.

### Responding to Concerns Raised During the Notification Process

The EUB expects applicants to engage in meaningful discussions with any person who has raised concerns or has questions respecting a proposed application. It is expected that applicants will make substantial efforts to resolve the matter prior to filing and during the review of a resources application, including use of third-party mediators, as discussed in the EUB's Appropriate Dispute Resolution (ADR) program described in EUB *Informational Letter (IL) 2001-01*.

If an applicant has made no attempt to respond to a person who has expressed concerns or is seeking understanding or answers to questions, the application, in most cases, will be **closed**.

The EUB recognizes that discussions may come to an impasse or that a person who has expressed concerns may decline to participate in the ADR process. Additionally, in some cases, a company may be of the view that the objection is not relevant to the issues of the application and that beyond initial efforts it should not be required to attempt to resolve the issue. In these cases, the company may proceed to file its application (if not filed) and to include the letter(s) objecting to the proposal, its response to the objection(s), and a discussion of its view of how the EUB should proceed with the application.

**Table 1. Minimum notification requirements required prior to filing application[1]**

| Application type (section in *Directive 065*) | Notification and confirmation of nonobjection from representative list as necessary to ensure coverage | Area of contact |
|---|---|---|
| Special drilling spacing unit (1.6) | • Refer to Section 1.6 for notification requirements | |
| EOR scheme (amendment) (2.1) | • All well licensees of wells completed in the pool | The applied-for approval area and the area within 800 m of any proposed enhanced oil recovery injector |
| EOR scheme (new) (2.1) | • All well licensees of wells completed in the pool | The applied-for approval area and the area within a quarter section of the applied-for approval area |
| Gas cycling scheme (amendment) | • All well licensees of wells completed in the pool | The applied-for approval area |
| Gas cycling scheme (new) | • All well licensees | The applied-for approval area and the area within one section of the applied-for approval area |
| Concurrent production (2.4) | • Unit operator ( if applicable)<br>• Approval holder of scheme (if applicable)<br>• All well licensees | EUB-designated pool |
| Waste disposal (Class I)[2] (4.1) | Industry<br>• Unit operator ( if applicable)<br>• Approval holder of scheme<br>• All well licensees<br>• All mineral lessees<br>• All mineral lessors | A radius of 1.6 km from the proposed disposal well where the disposal zone is known to be present |
| | Public<br>• Landowners and occupants | A radius of 0.5 km from the proposed disposal well |
| Acid gas disposal[3] (4.2) | • Unit operator ( if applicable)<br>• Approval holder of scheme (if applicable)<br>• All well licensees<br>• All mineral lessees<br>• All mineral lessors | If into a depleted hydrocarbon pool, the EUB-designated pool; if into an aquifer, a radius of 1.6 km from the section containing the disposal well |

| Application type | Consultation and documentation of negotiations with | Area of contact |
|---|---|---|
| Rateable take (1.1) | • All well licensees | EUB-designated pool if present; otherwise applicant's pool interpretation |
| Common carrier/processor/ purchaser (1.2, 1.3, 1.4) | • Carrier, processors, or purchasers involved<br>• All well licensees | Not applicable<br>In pool |
| Compulsory pooling (1.5) | • All mineral lessees<br>• All mineral lessors of unleased tracts | EUB-designated drilling spacing unit |

[1] Note that these are **minimum** requirements. The consequences of incomplete notification are discussed in the preceding text.
[2] Notification and consent will be required as part of any request for a surface facility approval associated with waste disposal. A surface facility approval must be obtained from the EUB's Waste Operations Group and/or Alberta Environment before a waste disposal well approval can be issued.
[3] If a new emergency response plan (ERP) is needed or an existing ERP is updated, conduct notification for ERP purposes to all potentially adversely affected parties and provide confirmation of no objection or concerns.

Table 2. Minimum notification requirements required prior to EUB decision[1]

| Application type (section in *Directive 065*) | Notification and confirmation of nonobjection from representative list as necessary to ensure coverage | Area of contact |
|---|---|---|
| Project and enhanced recovery recognition status (2.2/2.3) | • Not applicable | Not applicable |
| Commingled production (3.1) | • Refer to Section 3.1 for notification requirements | |
| Good production practice/ special maximum limitation/gas-oil ratio penalty relief (3.2.2, 3.2.3, 3.2.4) | • Unit operator (if applicable)<br>• Approval holder of scheme (if applicable)<br>• All well licensees | EUB-designated pool |
| Gas allowable (3.3) | • Unit operator (if applicable)<br>• Approval holder of scheme (if applicable)<br>• All well licensees | EUB-designated pool plus 1600 m surrounding the pool |
| Disposal, except waste disposal (Class I) and acid gas disposal (see Table 1) (4.1) | • Unit operator ( if applicable)<br>• Approval holder of scheme (if applicable)<br>• All well licensees | A radius of 1.6 km from the proposed disposal well where the proposed disposal zone is known to be present |
| Underground gas storage[3] (4.3) | • Unit operator ( if applicable)<br>• Approval holder of scheme (if applicable)<br>• All well licensees<br>• All mineral lessees<br>• All mineral lessors | The EUB-designated pool boundary of the proposed storage pool and a 1.6 km radius from that pool boundary; notification should cover all zones, including those that overlie and underlie the storage pool |

[1] Note that these are **minimum** requirements. The consequences of incomplete notification are discussed in the preceding text.

1. Equity

# Unit 1 Equity

## 1.1 Application for a Rateable Take Order

### 1.1.1 Background

The purposes of the *Oil and Gas Conservation Act* (*OGCA*) are, among other things, to effect the conservation of oil and gas resources, to afford each owner the opportunity of obtaining its share of the production of oil or gas from any pool, and to provide for economic, orderly, and efficient development in the public interest. Section 36 of the *OGCA* mandates the EUB to address all three of these purposes. Historically this legislation has been used only in the equity context and to allow for economic, orderly, and efficient development; other sections of the *OGCA* have been used to ensure conservation of resources.

Under Section 36 the EUB may limit the amount of gas that may be produced and/or distribute the amount of gas that may be produced from a pool or part of a pool. Historically, this legislation has been used to authorize the distribution of gas production among wells in a nonassociated gas pool.

### 1.1.2 When to Make This Application

A situation that could warrant an application under Section 36 of the *OGCA* would typically involve a number of gas wells of different ownership in a pool being on production. One owner believes its reserves are being inequitably drained because its well has been placed on production at rates that do not allow the well to capture the owner's share of the pool reserves. The well's rate may be restricted by pipeline or processing capacity or by a gas sales contract.

In the case where the rate limitation is due to pipeline or processing capacity, the owner has capacity or its own facilities and believes that it would not represent economic, orderly, and efficient development to build or obtain additional capacity. Where the limitation is due to a gas sales contract, the owner has been unable to adjust the contract or produce gas in excess of the contract to allow for an equitable rate of production.

### 1.1.3 How the EUB Processes the Application

The EUB considers the issuance of a rateable take order to be a very significant action because it has the potential to override contractual arrangements put in place through normal business practices. Consequently, before approving an application, the EUB requires an applicant to demonstrate that it is being deprived of the opportunity to obtain its share of production from the pool. The applicant must show that drainage has occurred and continues to occur or that it can be expected to occur with a very high degree of certainty. Additionally, the drainage must be a result of the applicant not having an opportunity to produce its share of production. The restriction in rate must not be due to limitation in well capability. The EUB has previously ruled that where the only limitation on production is well capability, a producer is not being deprived of an opportunity to obtain an equitable share of production (*Decision 85-5*).

Each application for a rateable take order proceeds to a public hearing.

### 1.1.4 Requirements for an Application for a Rateable Take Order (file 12 copies)

| Requirements | Comments |
|---|---|
| 1) A statement of what is being requested, including<br><br>a) a reference that the application is being made under Section 36 of the *OGCA*, and<br><br>b) the pool and wells to which the order would apply. | For example, HP Gas Company applies for an order under Section 36 of the *OGCA* distributing gas production among wells in the Woodword Viking A Pool, which includes the wells with the unique identifiers of … |
| 2) A discussion giving the reasons why you are requesting the order, including a description of the circumstances that in your opinion have led or will lead to an inequitable situation. | |
| 3) Documentation showing your attempts to negotiate a solution to the problem, including<br><br>a) identification of all parties involved and the nature of their issues and concerns, and<br><br>b) an outline of the attempts to resolve the issues, including type of discussions held, timing, and frequency. | You must have made substantial efforts to resolve the situation; the application should be a final resort. You should also continue your efforts to resolve the matter on a voluntary basis (including consideration of a third-party mediator) after the application has been filed with the EUB.<br><br>Your discussion must include why the negotiations did not lead to a settlement and what dispute resolution efforts were conducted. Matters of confidentiality and disclosure should be addressed and determined by the parties prior to submission of the application. |
| 4) Your geological interpretation of the pool involved, including<br><br>a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool,<br><br>b) an interpreted and annotated log cross-section or representative well log(s) showing<br><br>i) stratigraphic interpretation of the zone(s) of interest, | This information should show that your well is part of the subject pool. The net pay map should show the entire pool and illustrate wells outside the pool that control the edges of the pool.<br><br>If there is a dispute among the parties involved regarding the delineation of the pool(s) in question, an annotated cross-section should be included in the application; if there is no dispute respecting this issue, an annotated representative well log is sufficient for the purposes of the application. |

| Requirements | Comments |
|---|---|
| ii) interpretation of fluid interfaces present, | |
| iii) completions and treatments to the wellbore(s), with dates, | |
| iv) cumulative production, | |
| v) finished drilling date and kelly bushing (KB) elevation, and | |
| vi) the scale of the log readings, and | |
| c) a tabulation of the interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | This allows the EUB to assess your mapping and reserves calculation requested in the following item. In addition, these data may be used to allocate production (see item 8 below). |
| 5) An evaluation of the oil and gas reserves for the pool and for your lands, including | The reserves estimates confirm that there are reserves available for production. |
| a) an estimate of the initial oil volume and gas volume in place, | |
| b) an estimate of the oil and gas recovery factors, | |
| c) a description of the methods used in determining (a) and (b) above (e.g., material balance, volumetric analysis, model study, a comparison of analog pools), and | |
| d) the supporting data used in determining (a) and (b) above and the sources of the data (i.e., pressure/volume/temperature (PVT) properties and source, pressure data and source). | All data used in obtaining the reserves estimates should be provided so that your analysis can be duplicated using information supplied in this application. |
| 6) Deliverability test data showing that your well is capable of producing at an economic rate from the pool to which the proposed order would apply. | A summary of the deliverability test data may be used provided the detailed test data have been filed in accordance with EUB *Directive 040*. |

| Requirements | Comments |
|---|---|
| 7) Where drainage is alleged, a discussion including | |
| a) evidence showing that the reserves underlying your lands have been drained subsequent to the completion of your well in the pool, and | In cases where a well has remained shut in, drainage may be confirmed by summarizing at least two pressure tests taken on the well. If you are arguing that your currently producing well is not producing at sufficient rates to recover an equitable share of production, a comparison may be made between the actual produced volume from the well and the volume the well should have produced to obtain an equitable share of production. You should present a detailed calculation showing how you determined your equitable share of production. |
| b) an estimate of the total amount of inequitable drainage that has occurred from your lands since your well was completed in the pool, together with details of how the drainage was calculated. | |
| 8) A discussion of your proposal as to how the EUB should restrict or distribute production from the pool that includes | The EUB usually distributes production among wells in a pool on a percentage basis, rather than setting any specific rate or volume. The proportion of production allocated to each well is commonly based on the following formula: *Percentage of pool production for specific well = 100 x (wellbore net pay x porosity x gas saturation x area of spacing unit or validated area for specific well)/(sum of wellbore net pay x porosity x gas saturation x area of spacing units or validated areas for all wells)* |
| a) a tabulation of the proportion of production or rate of production that each well or group of wells should be allowed to produce, together with the details of how the proposed production scheme was obtained, and | *Directive 032* and *Decision 91-8* discuss the EUB's commonly used allocation formula and the validated area concept. |
| b) if considered appropriate, the total production rate proposed for the pool, together with the details of how this rate was determined and why such a rate should be set, and | The EUB has not commonly used mapping as a means to determine hydrocarbon pore volume in a spacing unit because in many cases such mapping is highly interpretative. The EUB has not normally factored the deliverability of a well into an allocation formula to avoid disputes on what constitutes appropriate well testing. You may propose an allocation formula other than the commonly used one; however, you should include detailed justification as to why the EUB should deviate from its usual practice in determining an allocation formula. |
| c) if specific rates are proposed under item 8(a), | |
| i) an indication of why rates, rather than a percentage allocation, are being proposed, | |
| ii) whether the proposed rates are economic for each well or group of wells, and | |
| iii) whether each well or group of wells would be capable of producing at the proposed rate. | |

| Requirements | Comments |
| --- | --- |
| | It is not usually necessary to limit the total rate of production (item 8(b)), but this remains an option. In respect of item 8(c), it is not the EUB's usual practice to set specific rates, but this also remains an option. In some cases it may be useful to set minimum rates, with a percentage allocation above the minimum rate. If a well falls below the minimum rate, other wells are restricted only to their minimum rates and not below. Items 8(c)(ii) and 8(c)(iii) should be addressed only when there is likely to be a dispute about the economics of a proposed rate or about the capability of a well to produce at a specified rate. |

## 1.2 Application for a Common Purchaser Order

### 1.2.1 Background

The *Oil and Gas Conservation Act* (the *OGCA*) affords each owner the opportunity of obtaining its share of the production of oil or gas from any pool. Accordingly, the EUB may issue a declaration of common purchasers of oil and gas under Sections 50(1) and 51(1) of the *OGCA*. Historically the EUB has not received applications filed under Section 50(1) respecting common purchasers of oil, as the prorationing of oil has been handled under other legislation. However the EUB has considered many applications under Section 51(1) respecting common purchasers of gas and, accordingly, existing practices primarily deal with the common purchasers of gas.

### 1.2.2 When to Make This Application

A situation that would warrant the filing of a common purchaser application with the EUB would be when the gas reserves associated with a well are being drained by other wells producing in the same pool because the owner of the well cannot obtain a reasonable market for its gas or negotiate a share of the existing markets of other owners with producing wells in the same pool. The well owner has recourse to apply for the declaration of a common purchaser in order to recover its share of gas from the pool.

### 1.2.3 Terms of Application

An order under Sections 50(1) and 51(1) of the *OGCA* obliges each common purchaser, among other things, to purchase production offered for sale to it without discrimination in favour of one producer or another in the same pool. Thus, a common purchaser order would allow an owner that has been unable to obtain its own market to share in the markets obtained by other owners in the pool.

Under Section 56 of the *OGCA,* an applicant filing a common purchaser application has the option of requesting that the common purchaser order be effective retroactively to the date of the application. The EUB considers such a request in light of the particular situation and has the discretion to grant the request, deny it, or provide some measure of retroactivity other than what was requested.

In order to give effect to a common purchaser order, an applicant filing a request for the declaration of a common purchaser of gas under Section 51(1) of the *OGCA* also has the option to request under Section 51(4)(a) or (b) that the EUB direct

- the point at which the common purchaser shall take delivery of gas offered for sale, and
- the proportion of gas that the common purchaser shall purchase from each producer or owner offering gas for sale.

If there is a dispute as to the price to be paid by the common purchaser for the gas, either the common purchaser or an owner may also apply to the EUB to set the price under Section 55(2). An applicant may choose to file an application for the EUB to set the price of the gas at the same time as it files an application for declaration of a common purchaser. However, in most cases where the EUB is prepared to grant a common purchaser order, the application for setting the price of the gas is likely to be deferred to allow for additional negotiations.

Usually it would not be necessary for an applicant making a request under Section 51(1) for the declaration of a common purchaser to also make requests under each of Sections 51(4)(a), 51(4)(b), 55(2), and 56, although each option is available if there is a dispute on each issue. For example, an application for the declaration of a common purchaser under Section 51(1) typically also includes requests under Section 51(4)(b) for allocation of production among wells in a pool and under Section 56 respecting the effective date of an order. Requests made under Sections 51 and 56 should be included in the same application. A request under Section 55(2) for the EUB to set prices may be filed together with the initial request for the declaration of the common purchaser or after the common purchaser order has been issued and the parties have attempted but failed to reach an agreement on the price to be paid for the gas.

### 1.2.4 How the EUB Processes the Application

In evaluating an application for a common purchaser order, the EUB considers

- whether drainage has occurred subsequent to the completion of a well on the applicant's property and, if so, to what extent,
- whether opportunities have existed for the marketing of production from the applicant's property and, if so, when and the nature of them,
- future prospects for marketing the production, and
- if application is being made under Sections 51(4)(a), 51(4)(b), and/or 55(2) for the designation of a delivery point, the proportion of production to be purchased and/or the setting of the price to paid, if the applicant could not make reasonable arrangements on these matters.

Each application for a common purchaser order proceeds to a public hearing.

### 1.2.5 Requirements for an Application for a Common Purchaser Order (file 12 copies)

| Requirements | Comments |
|---|---|
| 1) A statement of what you are requesting, including<br>a) the purchasers proposed as the common purchasers,<br>b) the pool to which the common purchaser declaration would apply, and<br>c) the proposed effective date of the order. | For example, Company X applies, pursuant to Section 51(1) of the *OGCA*, for an order declaring Company Z as a common purchaser of gas produced from the Woodward Viking A Pool. Company X also requests, pursuant to Section 56 of the *OGCA*, that the order be effective as of the date of the application and that, pursuant to Section 51(4)(b), the EUB direct the proportion of gas that the common purchaser shall purchase from each producer or owner offering gas for sale. |
| 2) A statement of whether you are requesting, pursuant to Section 51(4) or 55(2) of the *OGCA*, that the EUB, to give effect to the common purchaser declaration, direct | |

| Requirements | Comments |
|---|---|
| a) the point at which the common purchaser shall take delivery of gas offered for sale, and/or<br><br>b) the proportion of gas that the common the common purchaser shall purchase from each producer or owner offering gas for sale, and/or<br><br>c) the price that the common purchaser shall pay for the gas. | |
| 3) A discussion of the reasons why you are requesting the subject order, including a description of the circumstances that in your opinion have led or will lead to an inequitable situation. | |
| 4) Evidence that your well is completed in the pool to which the common purchaser is to apply, including | |
| a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool, | The net pay map should show the entire pool and illustrate wells outside the pool that control the edges of the pool. |
| b) where pool delineation or fluid interfaces are based on structural interpretation, a structure contour map of the pool and offsetting area, | |
| c) an interpreted and annotated log cross-section or representative well log(s) showing | If there is a dispute among the parties involved regarding the delineation of the pool(s) in question, you should include an annotated cross-section in the application; if there is no dispute respecting this issue, an annotated representative well log is sufficient. |
| i) stratigraphic interpretation of the zone(s) of interest, | |
| ii) interpretation of the fluid interfaces present, | |
| iii) completions and treatments to the wellbore(s), with dates, | |
| iv) cumulative production, | |

| Requirements | Comments |
|---|---|
| v) finished drilling date and kelly bushing (KB) elevation, and | |
| vi) the scale of the log readings, and | |
| d) a tabulation of the interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | These data allow the EUB to assess your mapping and reserves calculations requested in the following item. In addition, these data may be used to allocate production (see item 13). |
| 5) Data showing that the well is completed and capable of producing at an economic rate from the pool to which the common purchaser order is to apply. | |
| 6) An evaluation of the oil and gas reserves for the pool and for your lands, including | The reserves estimates confirm that there are reserves available for production. |
| a) an estimate of the initial oil volume and gas volume in place, | |
| b) an estimate of the oil and gas recovery factors, | |
| c) a description of the methods used in determining (a) and (b) above (i.e., material balance, volumetric analysis, model study, a comparison of analog pools), and | |
| d) the supporting data used in determining (a) and (b) above and the sources of the data (i.e., pressure/volume/temperature [PVT] properties and source, pressure data and source). | You should provide all data used in obtaining the reserves estimates so that your analysis can be duplicated. |
| 7) A discussion of drainage, including | Drainage should be confirmed by summarizing at least two pressure tests obtained from the well. |
| a) evidence showing that the reserves underlying your lands have been drained subsequent to the completion of your well in the pool, | |
| b) an estimate of the total amount of drainage that has occurred from your lands since your well was completed in the pool, together with details of how the drainage was calculated, and | |

| Requirements | Comments |
|---|---|
| c) estimates of the present and the expected future rate of drainage of your reserves in the absence of the common purchaser order, together with the details of how the estimates were obtained. | |
| 8) A discussion of<br><br>a) the opportunities that have existed for the marketing of gas or oil produced from your property, including documentation showing your attempts to obtain a market for your gas or oil, and<br><br>b) the future prospects for marketing the gas or oil. | You should have made substantial efforts to obtain your own markets and to negotiate a voluntary sharing of the existing markets of other owners in the pool. You should apply to the EUB only as a last resort. You should also continue your efforts to resolve the matter on a voluntary basis after filing the application with the EUB. |
| 9) A map showing the areas in the pool from which each purchaser purchases gas or oil and the location of your property. | |
| 10) A statement that the proposed common purchaser purchases, produces, or otherwise acquires gas or oil, as the case may be, from the pool containing your property. | |
| 11) If appropriate, a statement specifying the reasons why all the purchasers in the pool are not being proposed as common purchasers. | |
| 12) If you are requesting, pursuant to Section 51(4)(a) of the *OGCA*, that the EUB, to give effect to the common purchaser declaration, direct the point at which the common purchaser shall take delivery of gas offered for sale to it,<br><br>a) a discussion and documentation indicating what negotiations were carried out in regard to a delivery point and where the impasse lies, | |

| Requirements | Comments |
|---|---|
| b) a statement of the proposed delivery point, together with a discussion of the reasons why you propose the location,<br><br>c) analyses of the economics of the proposed delivery point and alternate delivery points, and<br><br>d) a discussion of the development and probable future development in the area. | For each case, the economic analysis should include a detailed itemization of all costs (excluding sunk costs), forecasts of production and revenue streams, and tabulations of before-tax rate of return, payback, and present value analyses. |
| 13) If you are requesting, pursuant to Section 51(4)(b) of the *OGCA*, that the EUB, to give effect to the common purchaser declaration, direct the proportion of the common purchaser's acquisitions of gas from the pool that it shall purchase from each producer or owner offering gas for sale,<br><br>a) a discussion and documentation indicating what negotiations were carried out in regard to distributing production among wells in the pool and where the impasse lies, and<br><br>b) a discussion of your proposal as to how the EUB should distribute production from the pool, including a tabulation of the percentage of total production that each well or group of wells should be allowed to produce, together with details of how the proposed scheme was obtained. | The EUB's usual practice is to allocate production among wells in a pool on a percentage basis, rather than setting any specific rate or volume. The proportion of production allocated to each well is commonly based on the following formula:<br>*Percentage of pool production for specific well = 100 x (wellbore net pay x porosity x gas saturation x area of spacing unit or validated area for specific well)/(sum of wellbore net pay x porosity x gas saturation x area of spacing units or validated areas for all wells).*<br><br>*Directive 032* and *Decision 91-8* offer discussions of the EUB's commonly used allocation formula and the validated area concept. The EUB has not commonly used mapping as a means to determine hydrocarbon pore volume in a spacing unit because in many cases such mapping is interpretive. The EUB has not normally factored the deliverability of a well into an allocation formula to avoid disputes on what constitutes appropriate testing of wells. You may propose an allocation formula other than the commonly used one; however, you should include detailed justification as to why the EUB should deviate from its usual practice in determining an allocation formula.<br><br>In some cases it may be useful to set minimum rates, with a percentage allocation above the minimum rate. If a well falls below the minimum rate, other wells are restricted only to their minimum rates and not below. |

| Requirements | Comments |
|---|---|
| 14) If you are requesting, pursuant to Section 56 of the *OGCA*, that the proposed order be effective prior to the date the order is issued but not prior to the date the application for the order was made to the EUB, a discussion as to why the order should be effective on the requested date, including<br><br>a) the steps that you have taken to market your production, and<br><br>b) an indication of whether or not your well is tied into a gathering system and, if not, why the order should be made on a retroactive basis. | |
| 15) If you are requesting, pursuant to Section 55(2) of the *OGCA*, for the EUB to set the price that the common purchaser shall pay for the gas to be taken under a common purchaser order,<br><br>a) a discussion and documentation indicating what negotiations were carried out respecting the price to be paid and where the impasse lies, and<br><br>b) a statement of the price you propose be paid for the gas, together with a detailed discussion of how this price was obtained and why you believe the price proposed is fair in comparison to the price offered. | If you are not asking the EUB to set the price of the gas to be taken by the common purchaser, you do not need to include the information noted in item 15.<br><br>Your response to item 15(a) may be combined with your response to item 8. Normally, the EUB would consider setting the price to be paid for the gas to be sold under a common purchaser order only if there were a specific dispute on the price issue. Therefore, if you are requesting the EUB to set the price, you must show that this is a specific area of dispute and that you have made substantial efforts to negotiate a resolution to the matter prior to making this request. |

## 1.3 Application for a Common Carrier Order

### 1.3.1 Background

The *Oil and Gas Conservation Act* (*OGCA*) affords each owner the opportunity of obtaining its share of the production of oil or gas from any pool and provides for economic, orderly, and efficient development in the public interest. Accordingly, the EUB may issue a declaration of a common carrier of oil, gas, or synthetic crude oil under Section 48 of the *OGCA*.

The common carrier provisions of the *OGCA* cannot be used to gain access to an oil battery, as indicated in the EUB letter of October 26, 2005, respecting Application No. 1398650.

### 1.3.2 When to Make This Application

A typical situation that would warrant the filing of a common carrier application with the EUB would be when an owner of a capable well has a market for its gas and has made arrangements to have the gas processed at a nearby plant. Its analysis shows the existing gathering system to be the only economically feasible way, the most practical way to transport the substance in question, or clearly superior environmentally for transporting its gas to the processing plant. However, the owner has been unsuccessful in negotiating an agreement on reasonable terms to use the existing pipeline. The well owner has recourse to apply for the declaration of a common carrier in order to obtain its share of gas from the pool.

### 1.3.3 Terms of Application

An order under Section 48 of the *OGCA* obliges each common carrier, among other things, to transport production without discrimination as between any of the owners for whom transportation is provided. Thus, a common carrier order would allow an owner to share in the existing capacity of the pipeline.

Under Section 56 of the *OGCA*, an applicant filing a common carrier application has the option of requesting that the common carrier order be effective retroactively to the date of the application. The EUB considers such a request in light of the particular situation and has the discretion to grant the request, deny it, or provide some measure of retroactivity other than what was requested.

In order to give effect to a common carrier order, an applicant filing a request for the declaration of a common carrier under Section 48(1) of the *OGCA* also has the option to request that the EUB direct

- the point at which the common carrier shall take delivery of the production (Section 48(4)(a)), and
- the proportion of production to be taken by the common carrier from each producer or owner offering production to be gathered, transported, handled, or delivered by means of a pipeline (Section 48(4)(b)).

If there is a dispute as to the tariff to be paid to the common carrier, either the common carrier or an owner may also apply for the EUB to set the price under Sections 55(1) or 55(3) of the *OGCA*. An applicant may choose to file an application for the EUB to set

tariffs at the same time as it files an application under Section 48. However, in most cases where the EUB is prepared to grant a common carrier order, the application for the setting of tariffs may be deferred to allow for additional negotiations.

Usually it would not be necessary for an applicant making a request under Section 48(1) of the *OGCA* for the declaration of a common carrier to also make requests under each of Sections 48(4)(a), 48(4)(b), 55(1) or (3), and 56, although each option is available if there is a dispute on each issue. For example, an application for the declaration of a common carrier under Section 48(1) typically also includes requests under Section 48(4)(b) for allocation of production among wells in a pool and under Section 56 respecting the effective date of an order. Requests under Sections 48 and 56 should be included in the same application. A request under Section 55(1) or (3) for the EUB to set a transportation fee may be filed together with the initial request for the declaration of the common carrier or after the common carrier order has been issued and the parties have attempted but failed to reach an agreement on the fee to be paid.

### 1.3.4 How the EUB Processes the Application

In evaluating an application for a common carrier order, the EUB considers whether the applicant has demonstrated that

- producible reserves are available for transportation through an existing pipeline,
- there is a reasonable expectation of a market for the substance that is proposed to be transported by the common carrier operation,
- the applicant could not make reasonable arrangements to use the existing pipeline,
- the proposed common carrier operation is the only economically feasible way, the most practical way to transport the substance in question, or clearly superior environmentally, and
- where application is being made under Sections 48(4)(a), 48(4)(b), or 55(1) or (3) of the *OGCA* for the designation of a delivery point, the proportion of production to be delivered to the pipeline, and/or the setting of the transportation fee to be paid, the applicant could not make reasonable arrangements on these matters.

Each common carrier application proceeds to a public hearing.

### 1.3.5 Requirements for an Application for a Common Carrier Order (file 12 copies)

| Requirements | Comments |
|---|---|
| 1) A statement of what is being requested, including | For example, Company X applies under Section 48 of the *OGCA* for an order declaring Company Z to be a common carrier of gas produced from the Woodward Viking A Pool through a pipeline extending from LSD x to LSD y and including a field compressor located in LSD z. Company X |
| a) a reference that you are making the application under Section 48 of the *OGCA*, | |

| Requirements | Comments |
|---|---|
| b) the name of the company to be designated as the common carrier,<br><br>c) reference to the pool or pools to which the proposed common carrier declaration would apply, or if it is proposed that the order not apply to any specific pool, a discussion as to why the order should not apply to a specific pool or pools,<br><br>d) the location of the pipeline(s) to which the proposed common carrier order would apply, including the proposed tie-in and terminating points, and<br><br>e) the proposed effective date of the order. | also requests, pursuant to Section 56 of the *OGCA*, that the order be effective as of the date of the application and that, pursuant to Section 48(4)(b) of the *OGCA*, the EUB direct the proportion of production to be taken by the common carrier from each producer or owner. |
| 2) A statement of whether you are requesting, pursuant to Section 48(4) or 55(1) or (3) of the *OGCA*, that the EUB, to give effect to the common carrier declaration, direct<br><br>a) the point at which the common carrier shall take delivery of production, and/or<br><br>b) the proportion of production to be taken by the common carrier from each producer or owner, and<br><br>c) the transportation fee that shall be paid to the common carrier. | See comments for items 13, 14, and 16. |
| 3) A discussion giving the reasons why you are requesting the subject order, including a description of the circumstances that in your opinion have led or will lead to an inequitable situation. | |
| 4) Documentation showing that reasonable arrangements for the use of the pipeline could not be agreed upon, including<br><br>a) identification of all parties involved and the nature of their issues and concerns, and | You should have made substantial efforts to negotiate a resolution to the matter prior to filing an application with the EUB. The application should be a last resort. You should also continue your efforts to resolve the matter on a voluntary basis (including consideration of a third-party mediator) after filing the application with the EUB. |

| Requirements | Comments |
|---|---|
| b) an outline of the attempts to resolve the issues, including type of discussions held, timing, and frequency. | Your discussion must include why the negotiations did not lead to a settlement and what dispute resolution efforts were conducted. Matters of confidentiality and disclosure should be addressed and determined by the parties prior to submission of the application.<br><br>The documentation should illustrate your case that you have been unable to obtain reasonable arrangements. Matters of dispute may include access on terms that would allow you to obtain your share of production from the pool at reasonable fees. |
| 5) A statement specifying the operator and ownership of the pipeline to be subject to the proposed order. | |
| 6) An indication of the available capacity of the pipeline to be subject to the proposed common carrier order. | |
| 7) A map showing the location of the subject pool, pipeline(s), any alternative facilities, and your production facilities. | |
| 8) Your geological interpretation of the pool involved, including | |
| a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool, | The net pay map should show the entire pool and illustrate wells outside the pool that define the edges of the pool. |
| b) where pool delineation or fluid interfaces are based on structural interpretation, a structure contour map of the pool and offsetting area, | |
| c) an interpreted and annotated log cross-section or representative well log(s) showing | If there is a dispute among the parties involved regarding the delineation of the pool(s) in question, you should include an annotated cross-section in the application; where there is no dispute respecting this issue, an annotated representative well log is sufficient. |
| i) stratigraphic interpretation of the zone(s) of interest, | |

| Requirements | Comments |
|---|---|
| ii) interpretation of the fluid interfaces present, | |
| iii) completions and treatments to the wellbore(s), with dates, | |
| iv) cumulative production, | |
| v) finished drilling date and kelly bushing (KB) elevation, and | |
| vi) the scale of the log readings, and | |
| d) a tabulation of the interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | These data assist the EUB to assess your mapping and reserves calculations requested in the following item. In addition, these data may be used to allocate production (see item 14). |
| 9) An evaluation of the oil and gas reserves for the pool and for your lands, including | The reserves estimates confirm that there are reserves available for production. |
| a) an estimate of the initial oil volume and gas volume in place, | |
| b) an estimate of the oil and gas recovery factors, | |
| c) a description of the methods used in determining (a) and (b) above (e.g., material balance, volumetric analysis, model study, a comparison of analog pools), and | |
| d) the supporting data used in determining (a) and (b) above and the sources of the data (i.e., pressure/volume/temperature [PVT] properties and source, pressure data and source). | You should provide all data used in obtaining the reserves estimates so that your analysis can be duplicated. |
| 10) A discussion of drainage, including | Drainage is not a prerequisite for the issuance of a common carrier order but could be one factor in determining the need for an order. In addition, the EUB would consider the extent to which drainage has occurred in evaluating what the effective date of the order should be. |
| a) evidence showing that the reserves underlying your lands have been drained subsequent to the completion of your well in the pool, and | |
| b) an estimate of the total amount of | In cases where a well has remained shut in, |

| Requirements | Comments |
|---|---|
| inequitable drainage that has occurred<br><br>from your lands since your well was completed in the pool, together with details of how the drainage was calculated. | you may confirm drainage by summarizing a<br><br>minimum of two pressure tests taken on the well. If you are arguing that your currently producing well is not producing at sufficient rates to recover an equitable share of production, you may make a comparison between the actual produced volume from the well and the volume the well should have produced to obtain an equitable share of production. You should present a detailed calculation showing how you determined your equitable share of production. |
| 11) A discussion of the practicability, economics, and any environmental concerns of<br><br>a) the proposed common carrier operation,<br><br>b) the alternative of building new facilities,<br><br>c) the alternative of using other facilities (such as taking the gas to another existing plant), and<br><br>d) any other alternatives available. | For each case, the economic analysis should include a detailed itemization of all costs used (excluding sunk costs), forecasts of production and revenue streams, and tabulations of before-tax rate of return, payback, and present value analyses. |
| 12) A discussion of the availability or the reasonable expectation of a market for the oil, gas, or synthetic crude oil that would be transported in the common carrier operation. | |
| 13) If you are requesting, pursuant to Section 48(4)(a) of the *OGCA*, that the EUB, to give effect to the common carrier declaration, direct the point at which the common carrier shall take delivery of any production to be gathered, transported, handled, or delivered by means of the subject pipeline,<br><br>a) a discussion and documentation indicating what negotiations were carried out in regard to a delivery point and where the impasse lies,<br><br>b) a statement of the proposed delivery point, together with a discussion of the reasons why you propose the location, | |

| Requirements | Comments |
|---|---|
| c) analyses of the economics of the proposed delivery point and alternative delivery points, and<br><br>d) a discussion of the development and probable future development in the area. | For each case, the economic analysis should include a detailed itemization of all costs (excluding sunk costs), forecasts of production and revenue streams, and tabulations of before-tax rate of return, payback, and present value analyses. |
| 14) If you are requesting, pursuant to Section 48(4)(b) of the *OGCA*, that the EUB, to give effect to the common carrier declaration, direct the proportion of production to be taken by the common carrier from each producer or owner offering production to be gathered, transported, handled, or delivered by means of the subject pipeline,<br><br>a) a discussion and documentation indicating what negotiations were carried out in regard to distributing production among wells in the pool and where the impasse lies, and<br><br>b) a discussion of your proposal as to how the EUB should distribute production from the pool that includes a tabulation of the proportion or percentage of total production that each well or group of wells should be allowed to produce, together with the details of how the proposed production scheme was obtained. | The EUB's usual practice is to allocate production among wells in a pool on a percentage basis, rather than setting any specific rate or volume. The proportion of production allocated to each well is commonly based on the following formula: *Percentage of pool production for specific well = 100 x (wellbore net pay x porosity x gas saturation x area of spacing unit or validated area for specific well)/(sum of wellbore net pay x porosity x gas saturation x area of spacing units or validated areas for all wells).*<br><br>*Directive 032 and Decision 91-8* offer discussions on the EUB's commonly used allocation formula and the validated area concept. The EUB has not generally used mapping as a means to determine hydrocarbon pore volume in a spacing unit because in many cases such mapping is highly interpretive. The EUB has not normally factored the deliverability of a well into an allocation formula to avoid disputes on what constitutes appropriate testing of wells. You may propose an allocation formula other than the commonly used one; however, you should offer detailed justification as to why the EUB should deviate from its consistent practice in determining an allocation formula.<br><br>In some cases it may be useful to set minimum rates, with a percentage allocation above the minimum rate. If a well falls below the minimum rate, other wells are restricted only to their minimum rates and not below. |
| 15) If you are requesting, pursuant to Section 56 of the *OGCA*, that the proposed order be | |

| Requirements | Comments |
|---|---|
| effective prior to the date the order is issued but not prior to the date the application for<br><br>the order was made to the EUB, a discussion as to why the order should be effective on the requested date, including<br><br>a) the steps that you have taken to market your production, and<br><br>b) an indication of whether your well is tied into a gathering system and, if not, why the order should be made on a retroactive basis. | |
| 16) If you are requesting, pursuant to Section 55(1) or (3) of the *OGCA*, that the EUB set the fee to be paid to the common carrier for the transportation of the gas or oil,<br><br>a) a discussion and documentation indicating what negotiations were carried out respecting the fee to be paid and where the impasse lies,<br><br>b) a statement of the fee you propose be paid for the transportation of the gas or oil under the common carrier order, together with a discussion of why you believe the fee proposed is fair in comparison to the fee offered,<br><br>c) if you have calculated the fee you propose be paid using the *JP-05* formulas,<br><br>i) a tabulation of the values used in the calculations, and<br><br>ii) a discussion of the basis and/or source for each value used in the calculation, and<br><br>d) if you have calculated the fee you propose be paid using a methodology other than the *JP-05* formulas (see Comments column), a detailed discussion of how the fee was obtained and why the EUB should used the methodology proposed rather than the *JP-05* formula. | If you are not asking the EUB to set the tariff to be charged by the common carrier for the transportation of the gas under the common carrier order, you do not need to include the information noted in item 16.<br><br>Your response to item 16(a) may be combined with your response to item 4. Normally, the EUB would consider setting the fee to be paid under a common carrier order only if there were a specific dispute on the fee issue. Therefore, if you are requesting the EUB to set the fee, you must show that this is a specific area of dispute and that you have made substantial efforts to negotiate a resolution to the matter prior to making this request.<br><br>*Decision 2006-021* confirms the EUB's support for the setting of tariffs and fees using the formula and principles set out in *JP-05: A Recommended Practice for the Negotiation of Processing Fees* (*JP-05*).<br><br>You may propose an alternative way of calculating a fair fee other than the *JP-05* formula; however, you should offer detailed justification as to why the EUB should not use the *JP-05* formula for the case in question. |

## 1.4 Application for a Common Processor Order

### 1.4.1 Background

The *Oil and Gas Conservation Act* (*OGCA*) affords each owner the opportunity of obtaining its share of the production of oil or gas from any pool and provides for economic, orderly, and efficient development in the public interest. Accordingly, the EUB may issue a declaration of a common processor of gas under Section 53 of the *OGCA*.

### 1.4.2 When to Make This Application

A typical situation that would warrant the filing of a common processor application with the EUB would be when an owner of a capable well has a market for its gas requiring processing to meet contract specifications. The owner believes that using the existing plant is the only economically feasible or most practical way to process the gas in question or is clearly superior environmentally, but the owner has been unsuccessful in negotiations to gain access to the plant on reasonable terms. The owner has recourse to apply for the declaration of a common processor in order to gain access to the plant and allow it to obtain its share of gas from the pool.

### 1.4.3 Terms of Application

An order under this section obliges each common processor, among other things, to process gas that may be made available for processing in the plant without discrimination in favour of one producer or owner as against another in the pool.

Under Section 56 of the *OGCA*, an applicant filing a common processor application has the option of requesting that the common processor order be effective retroactively to the date of the application. The EUB considers such a request in light of the particular situation and has the discretion to grant the request, deny it, or provide some measure of retroactivity other than that requested.

In order to give effect to a common processor order, an applicant filing a request for the declaration of a common processor also has the option of requesting that the EUB direct

- the proportion of production to be processed by the common processor from each producer or owner in the pool (Section 53(5)(a)), and/or
- the total amount of gas to be processed by the common processor from the pool subject to the common processor declaration (Section 53 (5)(b)).

If there is a dispute as to the tariff to be paid to the common processor, either the common processor or an owner may also apply under Section 55(2) of the *OGCA* for the EUB to set the price.

An applicant may choose to file an application for the EUB to set fees at the same time as it files an application under Section 53. However, in most cases where the EUB is prepared to grant a common processor order, the application for the setting of tariffs may be deferred to allow for additional negotiations.

Usually it would not be necessary for an applicant making a request under Section 53(1) for the declaration of a common processor to also make requests under each of Sections 53(5)(a), 48(5)(b), 55(2), and 56, although each option is available if there is a dispute on

each issue. For example, an application for the declaration of a common processor under Section 53(1) typically also includes requests under Section 53(5)(a) for allocation of production among wells in a pool and under Section 56 respecting the effective date of an order. Requests under Sections 53 and 56 should be included in the same application. A request under Section 55(2) for the EUB to set a processing fee may be filed together with the initial request for the declaration of the common processor or after the common processor order has been issued and the parties have attempted but failed to reach an agreement on the fee to be paid.

### 1.4.4 How the EUB Processes the Application

In evaluating an application for a common processor order, the EUB considers whether the applicant has demonstrated that

- producible reserves are available for processing and processing facilities are needed,
- reasonable arrangements for use of processing capacity in the subject processing plant could not be agreed upon by the parties,
- the proposed common processor operation is either the only economically feasible or most practical way to process the gas in question or is clearly superior environmentally, and
- when an application is being made under Sections 42(5)(a), 42(5)(b), and/or 55(2) of the *OGCA* for the allocation of production, a direction of the total volume of gas from the pool to be processed at the plant, and/or the setting of a processing fee, the applicant could not make reasonable arrangements on these matters.

Each application for a common processor order proceeds to a public hearing.

### 1.4.5 Requirements for an Application for a Common Processor Order (file 12 copies)

| Requirements | Comments |
|---|---|
| 1) A statement of what is being requested, including<br><br>a) a reference that you are making the application under Section 53 of the *OGCA*,<br><br>b) the name of the company to be designated as the common processor,<br><br>c) a reference to the pool or pools to which the proposed common processor declaration would apply,<br><br>d) the name and the location of the processing plant to which the proposed common processor order would apply, and | For example, Company X applies under Section 53 of the *OGCA* for an order declaring Company Z to be a common processor of gas produced from the Woodward Viking A Pool through the Grande Coulee Gas Plant located at LSD. Company X also requests, pursuant to Section 45 of the *OGCA*, that the order be effective as of the date of the application and that, pursuant to Section 42(5)(a) of the *OGCA*, the EUB direct the proportion of production to be taken by the common processor from each producer or owner in the Woodward Viking A Pool. |

| Requirements | Comments |
|---|---|
| e) the proposed effective date of the order. | |
| 2) A statement of whether you are requesting, pursuant to Section 53(5) or 55(2) of the *OGCA*, that the EUB, in order to give effect to the common processor declaration, direct<br>a) the proportion of production to be processed by the common processor from each producer or owner in the pool or pools,<br>b) the total amount of gas to be processed by the common processor from the pool or pools subject to the common processor declaration, and/or<br>a) the processing fee that shall be paid to the common processor. | See comments for items 14, 15, and 17. |
| 3) A discussion giving the reasons why you are requesting the order, including a description of the circumstances that in your opinion have led or will lead to an inequitable situation. | |
| 4) Documentation showing that reasonable arrangements for the use of processing capacity in the plant could not be agreed upon, including<br>a) identification of all parties involved and the nature of their issues and concerns, and<br>b) an outline of the attempts to resolve the issues, including type of discussions held, timing, and frequency. | You should have made substantial efforts to negotiate a resolution to the matter prior to filing an application with the EUB. The application should be a last resort. You should also continue your efforts to resolve the matter on a voluntary basis (including consideration of a third-party mediator) after you have filed the application with the EUB.<br><br>Your discussion must include why the negotiations did not lead to a settlement and what dispute resolution efforts were conducted. Matters of confidentiality and disclosure should be addressed and determined by the parties prior to submission of the application.<br><br>The documentation should illustrate your case that you have been unable to obtain reasonable arrangements. Matters of dispute may include access on terms that would allow you to obtain your show or production from the pool at reasonable tariffs. |

| Requirements | Comments |
|---|---|
| 5) A map showing the location of the subject pool, processing plant, any alternative facilities, and your production facilities. | |
| 6) A statement specifying the operator and ownership of the processing plant. | |
| 7) A discussion of<br>a) the total processing capacity of the plant,<br>b) the volumes of gas from the pool or pools to be subject to the proposed common processor declaration and from other pools currently processed at the subject plant, and<br>c) the processing capacity available to you in the plant. | |
| 8) An analysis of the composition of the gas to be processed under the common processor declaration, together with a discussion as to the capability of the plant to process the subject gas. | |
| 9) Your geological interpretation of the pool involved, including<br>a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool, | The net pay map should show the entire pool and illustrate wells outside the pool that control the edges of the pool. |
| b) where pool delineation or fluid interfaces are based on structural interpretation, a structure contour map of the pool and offsetting area, | |
| c) an interpreted and annotated log cross-section or representative well log(s) showing<br>i) stratigraphic interpretation of the zone(s) of interest,<br>ii) interpretation of the fluid interfaces present, | If there is a dispute among the parties involved regarding the delineation of the pool(s) in question, you should include an annotated cross-section in the application; if there is no dispute respecting this issue, an annotated representative well log is sufficient. |

| Requirements | Comments |
|---|---|
| iii) completions and treatments to the wellbore(s), with dates,<br><br>iv) cumulative production,<br><br>v) finished drilling date and kelly bushing (KB) elevation, and<br><br>vi) the scale of the log readings, and | |
| d) a tabulation of the interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | These data assist the EUB to assess your mapping and reserves calculations requested in the following item. In addition, the data may be used to allocate production (see item 14). |
| 10) An evaluation of the oil and gas reserves for the pool and for your lands, including | The reserve estimates confirm that there are reserves available for production. |
| a) an estimate of the initial oil volume and gas volume in place,<br><br>b) an estimate of the oil and gas recovery factors,<br><br>c) a description of the methods used in determining (a) and (b) above (e.g., material balance, volumetric analysis, model study, a comparison of analog pools), and | |
| d) the supporting data used in determining (a) and (b) above and the sources of the data (e.g., pressure/volume/temperature [PVT] properties and source, pressure data and source). | You should provide all data used in obtaining the reserves estimates so that your analysis can be duplicated. |
| 11) A discussion of drainage, including | Drainage is not a prerequisite for the issuance of a common processor order but could be one factor in determining the need for an order. In addition, the EUB considers the extent to which drainage has occurred in evaluating what the effective date of the order should be. |
| a) evidence showing that the reserves underlying your lands have been drained subsequent to the completion of your well in the pool, and | |
| b) an estimate of the total amount of inequitable drainage that has occurred from your lands since your well was completed in the pool, together with | In cases where a well has remained shut in, you can confirm drainage by summarizing a minimum of two pressure tests taken on the well. If you are arguing that your currently |

| Requirements | Comments |
|---|---|
| details of how the drainage was calculated. | producing well is not producing at sufficient rates to recover an equitable share of production, you may make a comparison between the actual produced volume from the well and the volume the well should have produced to obtain an equitable share of production. You should present a detailed calculation showing how you determined your equitable share of production. |
| 12) A discussion of the practicability, economics, and any environmental concerns of<br>a) the proposed common processor operation,<br>b) the alternative of building new facilities,<br>c) the alternative of using other facilities (such as taking the gas to another existing plant), and<br>d) any other alternatives available. | For each case, the economic analysis should include a detailed itemization of all costs (excluding sunk costs), forecasts of production and revenue streams, and tabulations of before-tax rate of return, payback, and present value analyses. |
| 13) A discussion of the availability or the reasonable expectation of a market for your gas that would be processed at the plant. | |
| 14) If you are requesting, pursuant to Section 53(5)(a) of the *OGCA*, that the EUB, in order to give effect to the common processor declaration, direct the proportion of production to be processed by the common processor from each producer or owner in the pool or pools,<br>a) a discussion and documentation indicating what negotiations were carried out in regard to distributing production among wells in the pool and where the impasse lies, and | The EUB's usual practice is to allocate production among wells in a pool on a percentage basis, rather than setting any specific rate or volume. The proportion of production allocated to each well is commonly based on the following formula: *Percentage of pool production for specific well = 100 x (wellbore net pay x porosity x gas saturation x area of spacing unit or validated area for specific well)/(sum of wellbore net pay x porosity x gas saturation x area of spacing units or validated areas for all wells).* |
| b) a discussion of your proposal as to how the EUB should distribute production from the pool, including a tabulation of the proportion or percentage of total production that each well or group of | *Directive 032* and *Decision 91-8* offer discussions of the EUB's commonly used allocation formula and the validated area concept. The EUB has not generally used mapping as a means to determine |

| Requirements | Comments |
| --- | --- |
| wells should be allowed to produce, together with the details of how the proposed production scheme was obtained. | hydrocarbon pore volume in a spacing unit because in many cases such mapping is highly interpretive. The EUB has not normally factored the deliverability of a well into an allocation formula to avoid disputes on what constitutes appropriate testing of wells. You may propose an allocation formula other than the commonly used one; however, you should offer detailed justification as to why the EUB should deviate from its consistent practice in determining an allocation formula.<br><br>In some cases it may be useful to set minimum rates, with a percentage allocation above the minimum rate. If a well falls below the minimum rate, other wells are restricted only to their minimum rates and not below. |
| 15) If you are requesting, pursuant to Section 53(5)(b) of the *OGCA*, that the EUB, in order to give effect to the common processor declaration, direct the total amount of gas to be processed by the common processor from the pool or pools subject to the common processor declaration,<br><br>a) a statement of why you believe such a total volume should be set,<br><br>b) a discussion and documentation indicating what negotiations were carried out in regard to the total amount of gas to be processed by the common processor from the pool or pools subject to the common processor declaration and where the impasse lies, and<br><br>c) a statement of the total amount of gas you propose be processed by the common processor from the pool or pools subject to the common processor, together with a discussion of how the volume was determined. | |
| 16) If you are requesting, pursuant to Section 56 of the *OGCA*, that the proposed order be effective prior to the date the order is issued but not prior to the date the application for the | |

| Requirements | Comments |
|---|---|
| order was made to the EUB, a discussion as to why the order should be effective on the requested date, including<br><br>a) the steps that you have taken to market your production, and<br><br>b) an indication of whether your well is tied into a gathering system and, if not, why the order should be made on a retroactive basis. | |
| 17) If you are requesting, pursuant to Section 55(2) of the *OGCA*, for the EUB to set the processing fee to be paid to the common processor,<br><br>a) a discussion and documentation indicating what negotiations were carried out respecting the fee to be paid and where the impasse lies,<br><br>b) a statement of the processing fee you propose be paid, together with a discussion of why you believe the tariff proposed is fair in comparison to the tariff offered,<br><br>c) if you have calculated the processing fee you propose be paid using the *JP-05* formula (see Comments column),<br><br>i) a tabulation of the values in the calculations, and<br><br>ii) a discussion of the basis and/or source for each value used in the calculation, and<br><br>d) if you have calculated the processing fee you propose be paid using a methodology other than the *JP-05* formula, a detailed discussion of how the fee was obtained and why the EUB should used the methodology proposed rather than the *JP-05* formula. | If you are not asking the EUB to set processing fees, you do not need to include the information noted in item 17.<br><br>Your response to item 17(a) may be combined with your response to item 4. Normally, the EUB would consider setting processing fees only if there were a specific dispute on the fee issue. Therefore, if you are requesting the EUB to set the processing fee, you must show that this is a specific area of dispute and that you have made substantial efforts to negotiate a resolution to the matter prior to making this request.<br><br>*Decision 2006-021* confirms the EUB's support for the setting of fees using the formula and principles set out in *JP-05: A Recommended Practice for the Negotiation of Processing Fees* (*JP-05*).<br><br>You may propose an alternative way of calculating a fair processing fee other than the *JP-05* formula; however, you should offer detailed justification as to why the EUB should not use the *JP-05* formula for the case in question. |

## 1.5 Application for a Compulsory Pooling Order

### 1.5.1 Background

Section 5.005 of the *Oil and Gas Conservation Regulations* specifies that no well shall be produced unless there is common ownership throughout the drilling spacing unit (DSU). This means that if there are separate tracts within a DSU with different ownership, all owners within the DSU must have an arrangement to share in the costs and revenues associated with drilling and producing a well from that spacing unit. This type of arrangement is generally referred to as a pooling agreement. In most cases, mineral holders negotiate voluntary pooling arrangements. However, if an owner attempts but fails to negotiate a satisfactory pooling arrangement in a reasonable period of time, or a tract owner is missing and untraceable, or there is a dispute as to the ownership of a tract, the owner wishing to drill a well may apply to the EUB for a compulsory pooling order. This order serves the same purpose as a voluntary pooling arrangement by ensuring that each owner in the DSU shares appropriately in the costs and revenues associated with a well in the DSU.

The EUB's role in pooling matters, therefore, is to offer a regulatory avenue to resolve problems relating to pooling issues, thereby allowing each owner the opportunity to obtain its share of oil and gas from any pool.

Applications for compulsory pooling are made

- under Section 80 of the *Oil and Gas Conservation Act* (*OGCA*);
- if there is a missing and untraceable owner in the spacing unit, under both Sections 80 and 85 of the *OGCA* (Section 85 provides that the revenues associated with the missing and untraceable owner be paid to the Public Trustee); and
- if there is a dispute as to the ownership of a tract or ownership is unknown, under both Sections 80 and 86 of the *OGCA* (Section 86 provides that revenues associated with the disputed tract be paid to the Provincial Treasurer to be held in trust pending an order of the Court of Queen's Bench or until a settlement has been reached by the parties).

The EUB's current policies and practices respecting pooling arise from a combination of specific provisions of the *OGCA*, historical decisions made by the EUB, consultations with industry, and EUB decisions resulting from pooling applications considered at public hearings. These avenues have resulted in an EUB pooling order with standard terms. Nonstandard terms are included in an order only if there is substantial justification to do so. General information on major EUB policies and practices respecting pooling and the standard terms of a pooling order are noted below in the Requirements sections. More detailed information can be obtained from EUB staff.

### 1.5.2 How the EUB Processes the Application

EUB staff initially review a pooling application for completeness. If additional information is required, a letter is issued itemizing the information required. Processing of the application is deferred pending receipt of the requested information.

Except in cases involving missing and untraceable owners or minor amendments to existing pooling orders, once an application is complete the EUB normally issues a notice of hearing respecting the application. The notice of hearing would not usually be published in any newspapers but sent directly to parties with an interest in the petroleum and/or natural gas underlying the DSU. Interested parties would have a specified time period in which to file any objections they may have respecting the application.

If no objections are received in response to the notice of hearing, the EUB cancels the hearing and makes a decision on the application without a hearing. When approval is granted, the EUB proceeds with the steps required to issue a pooling order. This includes obtaining the approval of the Lieutenant Governor in Council to issue the order. If a valid objection to an application is filed, the scheduled hearing would proceed and the EUB would consider the application and the concerns raised.

In a few cases when it is warranted, the EUB may issue a notice of applications, rather than a notice of hearing. Again, the notice of applications is not usually published in any newspapers but is sent directly to parties with an interest in the petroleum and/or natural gas underlying the DSU. Interested parties would have a specified time period in which to file any objections they may have respecting the application. If no objections are received in response to the notice of applications, the EUB makes a decision on the application without further notice or a hearing. When approval is granted, the EUB proceeds with the steps required to issue a pooling order. This includes obtaining the approval of the Lieutenant Governor in Council to issue the order.

If a valid objection to an application is filed, the EUB schedules a public hearing to consider the application and the concerns raised.

### 1.5.3 Requirements for an Application for a Compulsory Pooling Order (file 12 copies)

| Requirements | Comments |
|---|---|
| 1) A statement of what you are requesting, including | You should cite Section 80 of the *OGCA* and, if applicable, Sections 85 and 86. For example: Company X is applying for a compulsory pooling order for the production of gas under Section 80 of the *OGCA* in the DSU constituting Section 13-45-12W4M. |
| a) a reference to the section(s) of the *OGCA* under which you are making the application, and | |
| b) the legal description of the DSU involved. | The size of the DSU involved should be consistent with the substance to be pooled (oil or gas). Thus, oil would normally be pooled within a standard oil DSU of a quarter section, while gas would be pooled within a standard gas DSU of one section.<br><br>Compulsory pooling occurs only within a single DSU. Section 80 of the *OGCA* does not allow for compulsory pooling within several DSUs. |

| Requirements | Comments |
|---|---|
| 2) A statement providing the legal description of each tract within the DSU and the ownership of that tract, together with a table showing the mailing addresses for all lessors and lessees (except the Crown). | For example. for the gas DSU constituting Section 13-45-12W4M: |

| | Ownership | |
|---|---|---|
| Tract | Lessor | Lessee |
| SW quarter | Crown | Company A |
| SE quarter | Freehold – ½ undivided J. Doe | Company A |
| | ½ undivided P. Doe | Not leased |
| North half | Freehold Company B | Company A |

You should provide the mailing addresses of all lessors (except the Crown) and lessees as an attachment to the application. This allows the EUB to provide notice of the application to all potentially adversely affected parties.

| | |
|---|---|
| 3) A statement of the formation to which you propose to drill or from which you propose to produce. | The formation subject to the pooling order would be cited in the order. In previous pooling applications where there has been a dispute about which formations should be subject to a pooling order, the EUB decided to limit the formation subject to the order to the known productive zone or to the major productive zone (*Examiner Reports 91-6* and *95-2*). |
| 4) A statement that an agreement to operate the tracts as a unit cannot be made on reasonable terms. | |
| 5) The particulars of the efforts you have made to obtain a voluntary agreement, including<br>a) identification of all parties involved and the nature of their issues and concerns,<br>b) an outline of the attempts to resolve the issues, including type of discussions held, timing, and facilities, and<br>c) an indication of your view of why attempts to obtain a voluntary pooling arrangement have failed in each case. | You should have made substantial efforts to negotiate a voluntary pooling arrangement. The application should be a last resort. You should also continue your efforts to resolve the matter on a voluntary basis (including considerations of a third-party mediator) after filing the application with the EUB.<br><br>Your discussion must include why the negotiations did not lead to a settlement and what dispute resolution efforts were conducted. Matters of confidentiality and disclosure should be addressed and determined by the parties prior to submission of the application.<br><br>A description of your efforts to resolve the situation should include a summary of |

| Requirements | Comments |
|---|---|
| | telephone calls and meetings and copies of relevant correspondence. |
| 6) If there is a well on the DSU that is to be produced under the proposed pooling order, a statement of the unique identifier of the well and its producing formation or formations. | The well to be subject to the pooling order would be cited in the pooling order. |
| 7) If there is not a well on the DSU drilled to the formation(s) referred to in item 3, a statement indicating the location (LSD) of the well to be drilled. | The proposed well location would be included in the pooling order. |
| 8) If there is not a well on the DSU drilled to the formation(s) referred to in item 3, a statement that if an order is made by the EUB, you are prepared to drill a well to the formation(s) in question, and in the event that no production of gas or oil is obtained, you will pay all costs incurred in the drilling and abandonment of the well in accordance with Section 80(2)(f) of the *OGCA*. | |
| 9) If there is not a well drilled on the DSU, an indication of whether you would see any difficulty in drilling the well within six months of the date of the proposed order if issued, and if so, an indication of what would be a more appropriate time limit to drill. | Section 74(2) of the *OGCA* implies that a well should be drilled within six months of the date of the order. |
| 10) A statement of the operator to be appointed for the well of interest in the proposed pooling order. | All pooling orders normally include a clause that names the operator of the well subject to the pooling order. |
| 11) A statement that the allocation of costs and revenues under the pooling order would be on a tract area basis, or if allocation is proposed to be on a basis other than an area basis, the proposed allocation and the details of how the allocation was determined, including | Section 80(4)(c) of the *OGCA* indicates that allocation shall be on an area basis unless it can be shown to the EUB that this is inequitable. Thus, allocation on an area basis is the normal provision of a pooling order, and an applicant would not need to justify why it has chosen to request an area-based allocation. |

| Requirements | Comments |
|---|---|
| a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool, | |
| b) if pool delineation or fluid interfaces are based on structural interpretation, a structure contour map of the pool and offsetting area, | |
| c) an interpreted and annotated log cross-section or representative well log(s) showing | If there is a dispute among the parties involved regarding the delineation of the pool(s) in question, you should include an annotated cross-section in the application; if there is no dispute respecting this issue, an annotated representative well log is sufficient. |
| i) stratigraphic interpretation of the zone(s) of interest, | |
| ii) interpretation of the fluid interfaces present, | |
| iii) completions and treatments to the wellbore(s), with dates, | |
| iv) cumulative production, | |
| v) finished drilling date and kelly bushing (KB) elevation, and | |
| vi) the scale of the log readings, and | |
| d) a tabulation of the interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | |
| 12) A statement indicating whether you are proposing that the requested order provide for the equalization of the actual cost of drilling the well to and completing it in the formation(s) named in the pooling order, in accordance with Section 80(4)(d) of the *OGCA*. | This is a standard provision of a typical pooling order. It applies to a situation where an applicant has itself drilled a well for the purpose of producing the zone to be subject to the pooling order or is proposing to drill such a well. If the case is not the standard one—for example, if a well was drilled and produced from a zone other than the one to be subject to the pooling order—it would normally be appropriate to modify the standard provision such that not all original drilling and completion costs would be shared. |

| Requirements | Comments |
|---|---|
| 13) A statement as to whether you are proposing that the requested order provide for a penalty to be imposed against actual drilling and completion costs in accordance with Section 80(5) of the *OGCA* and, if so,<br><br>a) what penalty should be imposed,<br><br>b) the justification for the proposed penalty,<br>and<br><br>c) confirmation that in accordance with normal EUB practice, you would agree that the proposed penalty would be applied if the tract owner did not pay its share of actual drilling and completion costs within 30 days of the pooling order being issued, the well commencing production, and the tract owner being notified in writing of its share of costs, whichever is later; or if you are proposing an alternative to the EUB's normal practice, a justification of why the EUB should depart from its normal practice in this case. | A penalty under Section 80(5) of the *OGCA* is a standard provision of pooling orders involving disputes between industry players. In these cases, the EUB has normally provided for the maximum penalty allowed by Section 80(5). That is, if the maximum penalty applies and a tract owner has chosen to incur the penalty rather than pay costs "up front," the tract owner would owe the well operator its share costs plus the penalty of two times the cost. If the tract owner's share of costs were $10 000 and it chose to incur the penalty, it would pay costs of $10 000 plus two times the costs, equalling $20 000, for a total of $30 000. |

## 1.6 Application for a Special Drilling Spacing Unit (DSU) Order

### 1.6.1 Background

The EUB has authority under the *Oil and Gas Conservation Act* (*OGCA*) to designate drilling spacing units (DSU) and target areas (well spacing) and to make or amend regulations pertaining to them. Well spacing is designed to promote conservation through efficient reservoir management and to protect the correlative rights of mineral right owners.

Part 4 of the *Oil and Gas Conservation Regulations* (*OGCR*) prescribes normal DSUs and target areas for conventional oil and gas wells in Alberta. Normal well density is limited to one well per DSU per pool except in the region of Alberta outlined on the map in the attached Schedule 13A of the *OGCR*. In the outlined area, the baseline well densities are as follows:

- Gas pool – 2 wells per pool per section in the Mannville Formation, 4 wells per pool per section for the formations above the Mannville
- Oil pool – 2 wells per pool per quarter section in the Mannville Formation

An operator wishing to drill and produce additional wells beyond that described in Part 4 of the *OGCR* must apply for approval prior to placing subsequent wells on production.

### 1.6.2 When to Make This Application

An application for a change in well spacing should be made prior to drilling and would occur in one or more of the following circumstances:

- change in target area
- fractional section
- reduced DSUs
- suspension of well spacing and target area requirements (holdings and units)

**Change in Target Area**

You may apply for a change in the target area of a DSU in order to avoid a surface obstruction or to access a geological feature provided that the change does not have an adverse impact on the equity of offset mineral owners. An application for a change in target area is submitted in accordance with Section 4.040(1) of the *OGCR*.

**Fractional Section**

Section 4.050(1) of the *OGCR* stipulates that if a fractional section contains a tract of land that differs in size by more than 5 per cent from a normal DSU, you must apply for approval to declare the tract as a DSU.

The EUB will consider an application to establish a tract of land as a DSU as long as the tract is at least half the size of the DSUs prescribed for the area. A tract that is too small to be a standalone DSU may be joined with an adjacent DSU only if common ownership exists between the two.

**Special Drilling Spacing Units**

During the development phase of a pool, it is sometimes apparent that normal DSUs do not provide an adequate well density for proper drainage. To accommodate an increase in well density, you may apply to the EUB to reduce the size of your DSUs, pursuant to Section 4.040(3) of the *OGCR*, on the basis of one of the following:

- Improved recovery will be obtained.
- Additional wells are necessary to provide capacity to drain the pool at an increased rate or deliverability while not adversely affecting the ultimate recovery of reserves from the pool.
- The requested DSUs would be in a pool in which there are DSUs of such reduced size.
- In a gas field, increased deliverability is desirable.

**Holdings and Units**

You may apply to suspend the DSU and target area provisions (holdings and units) for an area pursuant to Section 79(4) of the *OGCA* for the same reasons as prescribed for special DSUs or in cases where local geologic or topographical conditions may make it impractical to develop an area by drilling to prescribed target areas.

In suspending DSUs and target areas, a buffer zone distance between a well and the boundary of the holding or unit area, as well as well density, **must** be proposed. A minimum interwell distance between wells within the holding or unit area may also be considered.

A prerequisite for the suspension of DSUs and target areas is the establishment of either a holding (an area of common mineral right ownership at both the lessor and lessee level) or a unit. A holding is established in accordance with Section 5.190 of the *OGCR*. A unit is established by a voluntary agreement pursuant to Section 79 of the *OGCA*.

### 1.6.3 How the EUB Processes the Application

Generally, the EUB follows the outline shown in Figures 1 and 3.

### 1.6.4 Requirements for an Application for a Special DSU Order

**Notification**

An applicant for well spacing is responsible for conducting **preapplication notification** to parties that may be potentially directly and adversely affected. Notification requirements and expiry of the notice period **must** be fully met before filing an application with the EUB. Well spacing applications that have not met all notification requirements will be **closed**.

For the purpose of notification, applicants **must use** the appropriate notification templates provided in Appendix B. Notification templates may be expanded to provide for additional information that may be pertinent to an application to be filed with the EUB. Well spacing applications that have not used the appropriate notification templates will be **closed.**

Consent from notified parties is not required. However, the EUB does expect applicants to engage in meaningful discussions with any stakeholder that has raised concerns and/or questions. The EUB expects that you will make reasonable efforts to resolve matters prior to filing the application.

If landowner/occupant concerns are surface related and have not been resolved, site-specific surface concerns will be forwarded to the EUB's Facilities Applications Group. The applicant will be required to provide notification to the surface landowner/occupant of any facility application involving activity on lands of concern. This notification is in addition to the notification requirements specified in EUB *Directive 056: Energy Development Applications and Schedules*.

In no manner does the process noted above remove the obligation or expectation that the applicant will engage in meaningful discussions with any surface landowner or occupant that has raised concerns or has any questions at the spacing application stage. If an applicant has made no attempt to respond to a person who has expressed concerns or is seeking understanding or answers to questions, in most cases the application will be **closed**.

| Requirements | Comments |
|---|---|
| 1) Preapplication Notification<br><br>the | A minimum of 15 working days **must** be provided from the date the notification letter is mailed. The notification response period must be complete (minimum of 15 working days) prior to filing an application with EUB. |
| 2) Whom to notify | |
| a) All surface landowners and occupants | Within the area of application and in the case of directional drilling, the surface landowners/occupants on which a surface location is proposed. |
| b) Mineral lessees<br>c) Unleased Crown mineral owners<br>d) Unleased Freehold mineral owners | Minerals owners (b,c,d,e) **only** within the applied-for formation in the area of application and one DSU surrounding the area of application. |
| e) Leased Freehold mineral owners | Notification to Freehold mineral owners whose rights are leased is to provide them with information regarding a potential development and to support ongoing dialogue between the lessee and the Freehold mineral owner.<br><br>If the applicant is unable to locate a person, a description of the notification efforts with respect to the person should be included in the application. |

| Requirements | Comments |
|---|---|
| 3) Lists of parties notified | Provide a list of all mineral owners notified. The list should include the legal land description of each mineral owner and be structured to show those mineral owners within the area of application and mineral owners within one DSU surrounding the area of application.<br><br>The list should include mineral owners **only** within the applied-for formation. Excepting Freehold "fee-simple" mineral owners, the list should not name individual Freehold mineral owners, as this information is confidential. For these persons, the list should specify "Freehold – Individual" beside the legal land description.<br><br>Applicants must compile a list of all surface owners and occupants who have been notified of the application, with the name, the legal land description of each surface owner/occupant, and their mailing address, and have the list and notification letters available upon request. As this list contains personal, confidential information, it is **not** to be filed upon submitting the application to the EUB. |
| 4) Evidence of notification | Provide an example of the notification letter sent to surface owners and occupants and to individual Freehold mineral owners. **Do not** provide all notification letters that were sent.<br><br>Provide a written statement that all surface owners and occupants within the area of application have been notified.<br><br>Provide a written statement that all individual Freehold mineral owners within the area of application and one DSU surrounding the area of application have been notified. |
| 5) Summary of notification results | Provide a description of your notification program and documentation of the results.<br><br>Unresolved concerns, either verbal or written, must be included in the application filed with the EUB. Include a discussion of how the applicant has addressed the unresolved concerns and the outcome you expect from the EUB regarding the unresolved concerns.<br><br>**Do not** provide signed consent letters unless otherwise directed by the EUB. |

## Equity

Equity is the most common issue dealt with in well spacing. One of the objectives of the *OGCA* is to afford each owner the opportunity of obtaining its share of the production of oil or gas from any pool. The following information requirements deal with equity.

| Requirements | Comments |
|---|---|
| 1) A statement citing the provisions of the act or regulation under which the application is made. | |
| 2) Maps showing<br>a) the lessors and lessees **only** in the applied-for formation within the area of application and in one DSU surrounding the area of application. The area of application must be outlined on the lessor and lessee maps, and<br>b) wells in the area and status of each. | Lessor and lessee information must be accurate and shown on a map or maps of sufficient scale to facilitate a quick review of mineral rights ownership. For areas with complex ownership, a map coded to a list of mineral rights owners may be used. **Do not** send title search documents, as they add unnecessary bulk to the application and do not permit a quick review. Applications that provide title search documents in place of or in support of lessor/lessee maps will be **closed**. |
| 3) Statements of<br>a) the legal description of the area of application,<br>b) the proposed size, target areas, and orientation of the DSUs,<br>c) the substance to which the application applies (e.g., oil, gas, gas from coals), and<br>d) the names of the formations to which the application applies. | Where possible, the area of application should be restricted to a single field. Applications covering multiple fields may require more processing times.<br>See Sections 4.020 and 4.030 of the *OGCR*. |
| 4) If you are applying for the suspension of DSUs and target areas in a holding or unit, | A holding requires common ownership at the lessor and lessee levels. For the purpose of a holding, common ownership is defined in Section 1.020(2)(4) of the *OGCR*. |

| Requirements | Comments |
|---|---|
| a) the proposed well density within the area of application, and | An application for a holding **must** include a well density restriction. An interwell distance may also be proposed. |
| b) the proposed minimum distance from a producing well to the boundary of the area of application (buffer zone). | Interwell and buffer zone distances are derived from the DSUs and target areas previously approved in the area of application. For example, if one were to suspend the spacing requirements in an area subject to 16 hectare spacing, then the interwell distance and buffer zone would be 200 m and 100 m respectively, based on central target areas. Deviation from these distances would require information supporting the need to change these distances. An applicant may be required to submit an economic analysis of the development on the existing well spacing and the proposed well spacing, should the need for the well spacing change be challenged.<br><br>You can determine the size of the existing DSU by checking the spacing unit (SU) order for the appropriate field. |
| 5) A statement explaining how the proposed spacing change will affect the correlative rights of the offset mineral rights owners. | |

### Conservation

It is the EUB's responsibility to ensure that a reservoir is developed in a manner that maximizes the recovery of the resource. This is accomplished by establishing an appropriate well density and pattern to drain the reservoir in an efficient and economic manner. The following information requirements deal with conservation.

| Requirements | Comments |
|---|---|
| 1) Tabulations showing the productivity of wells in the area for the applied-for formation. | Production tables should include **only** wells that have production information from the zone/pool being applied for. Tables should include, but are not limited to, the unique well identification (UWI), producing formation/ pool, on production date (OPD), status, initial and current daily rates, and cumulative production volumes. Information **must be** presented in SI units. Applications not filed in SI units will be **closed**. |

| Requirements | Comments |
|---|---|
| 2) A discussion and data that support the need for a change in well spacing. This may include, but is not limited to, the following:<br><br>a) limited reservoir drainage due to coning of underlying water or overlying gas,<br><br>b) limited drainage due to poor reservoir transmissibility,<br><br>c) bypassed or trapped reserves, and<br><br>d) topographic features or unique subsurface geology that prohibits the drilling to prescribed target areas. | A change in target area based on topographic features or subsurface geology for a single DSU would not be approved if the change adversely affects the equity of the offset mineral right owner. |
| 3) A discussion on how the proposed spacing change will affect hydrocarbon recovery. | For example, will the spacing change lead to an increase in hydrocarbon recovery, or will it just reduce the amount of time it takes to recover the hydrocarbon resource? |

### Reduced Information Requirements

You only need to submit the information requirements in the Notification and Equity sections for applications for reduced DSUs and suspension of DSUs and target area requirements that meet the following criteria:

i) you are applying for identical or more stringent spacing provisions than those previously approved in the pool, or

ii) you are applying for identical or more stringent spacing provisions than those previously approved in the immediate adjacent area (i.e., the area of application shares a common boundary with previously approved spacing). The area of application should be proportionate in size to that previously approved.

# Unit 2 Conservation

## 2.1 Application for an Enhanced Recovery Scheme

### 2.1.1 Introduction

#### 2.1.1.1 Background

Enhanced recovery (ER) involves the improvement of hydrocarbon recovery through the injection of fluid(s) into a hydrocarbon reservoir to

- add to or maintain reservoir energy (pressure),
- displace hydrocarbons to production wells, or
- alter the reservoir fluids so that hydrocarbon flow and recovery are improved.

An application to implement or amend an ER scheme is required in accordance with Section 39(1)(a) of the *Oil and Gas Conservation Act*. Additional approvals from the EUB or other government agencies may also be required to implement an ER scheme.

If changes to an existing ER scheme approval are required, an application must be made for the appropriate amendment(s).

#### 2.1.1.2 Application Process

**A) How to Make an ER Scheme Application**

An ER application must be made using the Enhanced Recovery Scheme application form (see Appendix F). This form, in addition to Schedule 1 and the required attachments, must be included in the application. This information should be submitted electronically using the Electronic Application Submission (EAS) process accessed through the Digital Data Submission (DDS) screen on the EUB's Web site www.eub.ca. Whether received electronically or in paper form, the EUB will validate all applications to ensure that the requirements for ER schemes have been met. Incomplete applications or those containing significant errors will be closed.

This application process does not apply to crude bitumen ER schemes in the oil sands areas. An application for these schemes must be submitted in paper form (outside of EAS) and must comply with the *Oil Sands Conservation Act* (Section 10 for new schemes, or Section 13 for an amendment to an existing scheme).

**B) How the EUB Processes the Application**

The EUB reviews all ER scheme applications to ensure that hydrocarbon recovery will be optimized and that all ER scheme requirements are met. ER scheme applications meeting the base criteria detailed in Figure 2.1 will be processed in an expedited manner under a quick ER application process.

Those applications qualifying for the quick process will be dispositioned under a process that shifts the review emphasis from scheme design (application) to scheme performance (audit). Applications not meeting these base criteria will require a more detailed review addressing those areas in which the criteria are not met.

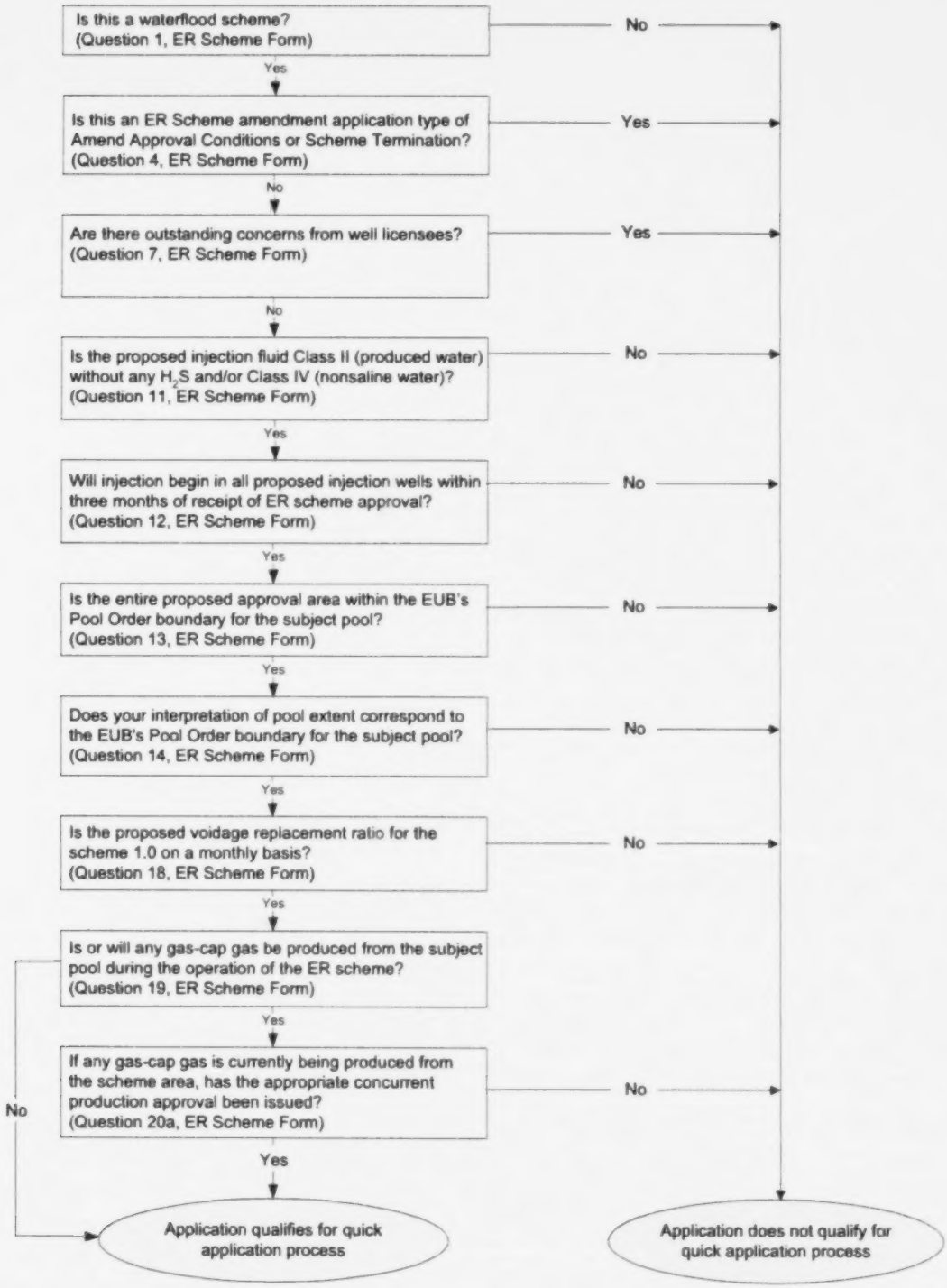

Is this a waterflood scheme?
(Question 1, ER Scheme Form)
No
Yes
Is this an ER Scheme amendment application type of Amend Approval Conditions or Scheme Termination?
(Question 4, ER Scheme Form)
Yes
No
Are there outstanding concerns from well licensees?
(Question 7, ER Scheme Form)
Yes
No
Is the proposed injection fluid Class II (produced water) without any $H_2S$ and/or Class IV (nonsaline water)?
(Question 11, ER Scheme Form)
No
Yes
Will injection begin in all proposed injection wells within three months of receipt of ER scheme approval?
(Question 12, ER Scheme Form)
No
Yes
Is the entire proposed approval area within the EUB's Pool Order boundary for the subject pool?
(Question 13, ER Scheme Form)
No
Yes
Does your interpretation of pool extent correspond to the EUB's Pool Order boundary for the subject pool?
(Question 14, ER Scheme Form)
No
Yes
Is the proposed voidage replacement ratio for the scheme 1.0 on a monthly basis?
(Question 18, ER Scheme Form)
No
Yes
Is or will any gas-cap gas be produced from the subject pool during the operation of the ER scheme?
(Question 19, ER Scheme Form)
Yes
If any gas-cap gas is currently being produced from the scheme area, has the appropriate concurrent production approval been issued?
(Question 20a, ER Scheme Form)
No
No
Yes
Application qualifies for quick application process
Application does not qualify for quick application process

**Figure 2.1. Decision Tree for Quick Enhanced Recovery Application Process**

The EUB will issue its disposition on ER scheme applications electronically, with the disposition being available for viewing through IAR Query for 30 days after the disposition of the application. IAR Query is accessible via the Applications page on the EUB's Web site. It will take the EUB longer to issue a decision on nonelectronic applications.

If ER operations involve any hydrogen sulphide ($H_2S$) injection and an emergency response plan (ERP) is required, the ERP must be approved prior to the ER scheme approval being issued. ERPs are approved and reviewed for compliance by the EUB Operations Group. See *Directive 071: Emergency Preparedness and Response Requirements for the Upstream Petroleum Industry* for further details on emergency response planning. In addition, if an injection fluid contains $H_2S$, all pipelines and facilities associated with the scheme must be approved for the appropriate sour service as per *Directive 056: Energy Development Applications and Schedules*.

Pool delineation differences that are pertinent to the ER scheme design must be resolved by a separate pool delineation application, in accordance with Section 2.5 of this directive, prior to the submission of an ER scheme application. An exception may be if the proposed approval area is larger than the Pool Order boundary due to wells not yet evaluated by the EUB.

#### 2.1.1.3 Other Issues

**A) Allowable Administration**

For oil pools on maximum rate limitation (MRL) administration, upon approval of a new ER scheme or ER scheme amendment, good production practice (GPP) will normally be granted to the wells within the approval area provided that injection will begin within three months of the approval date. If injection is not scheduled to begin within three months, the EUB may decide to grant GPP after written notification to the EUB that injection has commenced. Wells outside of the approval area will normally remain on MRL.

If granted, with the condition that injection will begin within three months, GPP will be effective concurrent with the ER approval. Wells must not produce above their MRL prior to GPP being granted. With the granting of GPP before confirmation that injection has commenced, the EUB expects operators to prudently produce their wells pending the successful implementation of ER.

For oil pools on GPP administration, upon approval of a new ER scheme or ER scheme amendment, GPP will normally be retained for wells within the approval area. For wells outside the ER approval area, the EUB may require the well licensees to address ER feasibility and the appropriateness of continued GPP status.

**B) Wellbore Integrity and Completion Requirements**

Wellbore integrity requirements, detailed in EUB *Directive 051: Injection and Disposal Wells—Well Classifications, Completions, Logging, and Testing Requirements*, will now be administrated through the EUB Operations Group and will occur outside of the ER application process. All submissions relating to the requirements of *Directive 051* should be sent to the EUB Operations Group for review and approval. The ER application disposition documents (approval and letter) will no longer incorporate the *Directive 051*

approval. The *Directive 051* requirement documents may be submitted either in advance of or following submission of the ER scheme application, but injection may not begin until after written confirmation that both the ER scheme application has been approved and the *Directive 051* requirements have been met.

The EUB specifies a deadline for injection to begin in the ER approval. If you cannot meet the *Directive 051* requirements and begin injection prior to the specified deadline, you must submit an ER amendment application (Amend Approval Conditions) addressing the anticipated commencement of injection and the reason(s) for the delay. If the *Directive 051* requirements are not met prior to the specified injection deadline, the EUB may rescind the approval or portion thereof.

**C) Reserves**

The EUB sets ER reserves outside of the ER scheme application review process. A nominal level of reserves information is required in all ER scheme applications, with more detail possibly being required for applications involving more complex ER processes. The processing of ER scheme applications will not be delayed to conduct a detailed review of reserves, but ER reserves will be set as early as possible following approval of an ER scheme. Approval holders may be required to provide additional information regarding reserves outside the application review process.

Reserves changes are not communicated directly to companies, but EUB reserves values are available upon request through Information Services. Any changes to the rate administration of wells due to reserve changes are reflected in the monthly MRL order.

**D) Use of Nonsaline Water**

The EUB supports the water management objectives of Alberta's *Water for Life: Alberta's Strategy for Sustainability* and the reduction plans outlined in the *Advisory Committee on Water Use Practice and Policy Final Report*. In this regard, applicants proposing to use nonsaline water in an ER scheme must obtain prior approval from Alberta Environment (AENV) under the *Water Act* for the diversion of the nonsaline water. This approval must be obtained before submitting an application for an ER scheme to the EUB. AENV requires applicants for water diversion to fully investigate alternatives and submit evidence showing that there are no practical alternative saline water sources. For information on a water diversion application, please contact the regional offices of AENV.

### 2.1.2 EUB Requirements and Expectations for ER Schemes

The EUB's objective in regulating ER schemes is to ensure that hydrocarbon recovery is optimized. In meeting this objective, the EUB must also ensure that scheme operations are conducted in a safe manner that is in the best interest of the public, protects the environment, and is equitable to other well licensees.

#### 2.1.2.1 Scheme Requirements

Scheme requirements are those rules that must be met and against which the EUB will take enforcement action in cases of noncompliance. In addition to all other requirements of the *Oil and Gas Conservation Act* and *Regulations*, the following are some specific requirements for all ER schemes:

- The approval holder is responsible for the successful operation of an ER scheme.
- Approval holders must comply with all conditions of ER approvals.
- The holder of the ER approval must be the current operator of the scheme.
- Injection must not begin in a well until after written confirmation that both the ER scheme application has been approved and *Directive 051* requirements have been met.
- Gas-cap gas production requires EUB approval for concurrent production.
- The type of ER scheme (e.g., waterflood, miscible flood, gas cycling) must be selected to maximize recovery.
- The type of injection fluid must be selected to maximize hydrocarbon recovery.
- All ER schemes must be operated in a manner that optimizes hydrocarbon recovery.
- The injection fluid must be compatible with the reservoir rock and reservoir fluid.
- The supply of injection fluid must be capable of maintaining the specified scheme voidage replacement.
- Injection wells and injection intervals must be located in such a manner that optimizes both areal and vertical sweep efficiency.
- The proposed approval area must reflect the area that will be effectively swept by the injection wells and must conform to the EUB-approved spacing.
- The approval will list only existing injection well locations, not those planned at some future date.
- The holder of an ER approval must comply with *Directive 051*. Injection pressures must remain below the approved maximum wellhead injection pressure at all times.
- Gas must be conserved in accordance with *Directive 060: Upstream Petroleum Industry Flaring Guide*.
- If an ERP is required for the injection of $H_2S$, an up-to-date EUB-approved ERP must be in place.
- The ER scheme approval area will not extend beyond the EUB's Pool Order boundary for the subject pool.

#### 2.1.2.2 Scheme Expectations

Although optimal operating practices may vary for each reservoir, there are fundamental principles and practices that the EUB expects to be followed, in addition to the above-noted requirements, for all ER schemes. EUB expectations on how ER schemes should be assessed, designed, implemented, and operated are described below.

**A) Assessment Stage**

- For all pools, including those that are on GPP, the feasibility of ER should be reviewed on an ongoing basis.
- For retrograde gas condensate pools, the feasibility of gas cycling should be evaluated before reaching the dew point pressure in order to maximize recovery.
- Well licensees should collect the appropriate reservoir data necessary to accurately assess ER potential.
- ER should normally be evaluated and, if feasible, implemented in oil pools prior to production of the gas cap.

- Pool delineation should be well understood prior to designing and implementing an ER scheme.
- The applicant should have a good understanding of the reservoir and fluid properties prior to designing the ER scheme.

**B) Design Stage**

- In waterfloods, produced water should be reinjected.
- Production wells that are second or third line offset from injection wells should be included in the proposed scheme only when it is anticipated that the proposed injection wells will be able to provide adequate sweep and pressure support.

**C) Implementation Stage**

- Injection operations should be initiated at the optimal time. Injection should begin before the reservoir pressure drops below the bubble point pressure in oil pools or the dew point pressure in the case of retrograde gas condensate pools.
- Injection operations in all approved injection wells should begin as soon as possible. In most cases, the EUB will specify a deadline for the commencement of injection of three months from the date of the approval or amendment.

**D) Operations**

- If there are multiple well licensees within the approval area, the approval holder is expected to coordinate the scheme operations to ensure that maximum recovery is attained.
- All well licensees in the approval area are expected to adhere to the approval conditions.
- Well licensees should collect the appropriate reservoir data necessary to accurately assess an ER scheme and optimize scheme performance.
- Alternatives to nonsaline water injection should be assessed on an ongoing basis.
- The entire approval area should have a uniform voidage replacement and pressure distribution.
- Where feasible and appropriate, the ER scheme should be operated at a reservoir pressure close to the bubble point pressure or dew point pressure.
- To provide operating flexibility, an ER approval does not need to be amended to remove wells that have ceased injection.
- Well licensees are expected to prudently produce their wells pending the successful implementation of ER.
- ER schemes should be monitored and adjustments or changes made to ensure optimum recovery.

### 2.1.3 Requirements for ER Scheme Applications

#### 2.1.3.1 Requirements That Must Be Met Before an ER Application May Be Submitted

An ER application may be submitted to the EUB once the following requirements have been met:

- The primary applicant* has obtained the right to represent all well licensees within the proposed approval area.
- The primary applicant has notified all well licensees in accordance with the requirements in Section 2.1.3.2.
- The proposed injection wells have been drilled.
- The source of the proposed injection fluid has been secured.
- There are no differences between the applicant's and the EUB's interpretation of pool delineation that are pertinent to the ER scheme.
- For a scheme amendment, the primary applicant is the approval holder.

### 2.1.3.2 Notification Requirements for ER Scheme Applications

An applicant must provide proper notification, including scheme details such as approval area, type of ER scheme, and injection well locations, to all well licensees in accordance with the following requirements. Notification must be provided a minimum of 10 days prior to submission of the application to the EUB. Failure to complete notification as required may result in an application being closed without being processed.

**Minimum Notification Requirements**

Applicants for enhanced oil recovery (EOR) schemes (new and amendment) must notify, as a minimum,

- licensees of wells that are completed in the pool and are within the proposed approval area,
- licensees of wells that are completed in the pool and are within 800 metres (m) of the proposed injection well(s), and
- for new EOR schemes, licensees of wells that are completed in the pool and are within a quarter section of the proposed approval area.

Applicants for gas cycling schemes (new and amendment) must notify, as a minimum,

- licensees of wells that are completed in the pool and are within the proposed approval area, and
- for new gas cycling schemes, well licensees that are within a section of the proposed approval area.

Special circumstances, such as pressure communication between pools through a common aquifer, may require notification beyond the minimum requirements.

Licensees of abandoned wells do not need to be notified.

The EUB expects well licensees to act in the best interest of all parties with an interest in a well, including lessees and lessors, particularly in cases of mixed ownership within the proposed approval area.

Applicants must retain the list of well licensees notified regarding the proposed scheme/amendment, the notification document, the date of notification, and any responses or comments received. This information is not required to be submitted as part

* A primary applicant is a company, other than a consulting company, that is submitting an application to the EUB.

of the ER application unless there are unresolved licensee concerns. In this case, a Licensee Concerns attachment must be included.

### 2.1.3.3 Forms and Attachments Required for ER Scheme Applications

#### A) Summary of Required Application Documents

All ER scheme applications must include

- Resources Applications Schedule 1
- ER Scheme application form (Appendix F),
- Attachments
  - Application
  - Approval Area Map
  - Pressure-Volume-Temperature (PVT) Data
  - Reserves Data
  - Licensee Concerns (if there are any unresolved concerns)
  - Isopach Map (for new ER schemes and significant area amendments)
  - Well Log(s) (for new ER schemes and significant area amendments)
  - Pressure Data and Interpretation (for new ER schemes and significant area amendments)
  - Structure Map (for new gas cycling schemes)
  - Miscellaneous (additional information to support the request)

Further explanation on the ER Scheme application form and attachments is provided in the following sections (B) and (C).

#### B) Explanatory Notes for ER Scheme Application Form Questions

The ER Scheme application form is in Appendix F. The numbering below corresponds to the questions on the form.

***Application Type***

*1) Type of ER scheme being proposed or amended:*

Only one type of ER scheme may be selected. Although schemes may have multiple types of injection fluid, there generally is a predominant recovery mechanism or scheme type. For example, a scheme with water-alternating-gas (WAG) injection is a miscible scheme even though solvent, water, and gas would be injected during the scheme's life.

If you choose Other, you must include a description of the ER process and supporting technical documents/papers discussing the method in the application.

*2) Is this application for a new ER scheme or an amendment to an existing ER scheme approval?*

If an EUB approval for ER does not exist for the subject scheme, select New.

If an EUB approval for ER exists for the subject scheme, select Amendment.

*3) What is the existing EUB approval number proposed for amendment?*

If the application is for an amendment to an existing ER scheme approval, enter the current approval number without alpha characters.

*4) Type of Amendment:*

If the application is for an amendment to an existing ER scheme approval, the type of amendment must be selected. Multiple amendment types may be selected, with the exception of "Scheme termination," which must be a singular ER scheme amendment type.

*Add injection well location(s):* Select this box if you are requesting approval to add one or more injection well locations to the approval.

*Amend approval area:* Select this box if you are requesting a change to the current approval area (shown in the appendix to the approval). The proposed approval area should reflect the area that will be effectively swept by the injection wells and should conform to the EUB-approved spacing.

*Amend approval conditions:* Select this box if you are requesting to change a condition of the approval. For example, this could include changes to the minimum operating pressure or voidage replacement requirements, but not a change to the holder of the approval.

*Scheme termination:* Select this box if you are requesting approval to rescind the ER approval.

***Ownership and Notification Information***

*5) The primary applicant must*

*a) be the proposed approval holder for a new scheme or the current approval holder for an existing scheme, and*

*b) represent all well licensees in the proposed approval area.*

*Have these requirements been met?*

YES means that both of these requirements have been met and the primary applicant accepts responsibility for compliance with all conditions of the approval.

NO means that one or both of these requirements have not been met, and as a consequence the application may not be submitted. Any request to change the approval holder must be made in accordance with Unit 5 of this directive.

*6) An ER scheme application cannot be submitted until notification of all well licensees has been completed in accordance with* Directive 065.

*Has notification been completed in accordance with* Directive 065?

YES means that the notification requirements specified in Section 2.1.3.2 have been met.

NO means that these requirements have not been met. An ER scheme application may not be submitted until these requirements have been met.

7) *Are there outstanding concerns from well licensees? If yes, the Licensee Concerns attachment must be submitted as part of the application, in accordance with* Directive 065.

YES means that there are unresolved concerns or objections from one or more of the well licensees that were notified of the application. The information required in a Licensee Concerns attachment is identified in Section 2.1.3.3(C) of this directive.

NO means that there are no known unresolved well licensee concerns from any of the well licensees that were notified of the application.

***Proposed Injection Well Locations and Injection Intervals***

This section must only be completed for new ER schemes and amendment types requesting to add injection well location(s).

8) *An ER scheme application cannot be submitted unless the proposed injection wells have been drilled.*

*Have the proposed injection wells been drilled?*

YES means that all the proposed injection wells have been drilled.

NO means that all the proposed injection wells have not been drilled. The EUB is not prepared to accept an ER application when the proposed injectors are not drilled because of the potential this creates for changes to the scheme details (commencement of injection date, bottomhole location of injector, and the unconfirmed presence and quality of the reservoir).

9) *An ER scheme application cannot be submitted unless the source of the proposed injection fluid has been secured.*

*Has the source of the proposed injection fluid been secured?*

YES means that the supply of injection fluid is secured and will be available for use by the proposed injection date.

If nonsaline water is to be used for injection, you must have a valid water diversion permit from Alberta Environment. The water diversion permit number must be provided in the Application attachment.

NO means that the injection fluid source has not been secured. The EUB is not prepared to accept an ER application when the injection fluid has not been secured because of the potential for delays in the commencement of injection.

*10) Provide the following for the proposed injection well locations:*

*Well Licence Number:* The well licence number issued by the EUB for the proposed injection well.

*Unique Well Identifier (UWI):* the UWI (LE/LSD-SEC-TWP-RGEWMER/ES) associated with the Well Licence Number. The full unique well identifier is listed in the

approval; it is important to enter the correct identifier. If the event sequence is not known or available, enter the "0" event and note this uncertainty in the Application attachment.

*Injection Interval:* The top and base depth of the injection interval.

*Porosity Interval:* The porosity top and porosity base depth of the reservoir proposed for injection.

*Fluid Interface:* The current gas/oil and oil/water depths (if applicable) in the reservoir proposed for injection. These depths may be measured or estimated.

*11) What type of injection fluid, as identified by* Directive 051, *will be used?*

Multiple injection fluids may be selected. Further descriptions of the injection classes are in *Directive 051*.

*11a) If an injection fluid contains $H_2S$ and an emergency response plan (ERP) is required, the EUB must ensure that an up-to-date ERP is in place prior to its decision on the application.*

*Is an EUB-approved ERP incorporating the proposed scheme in place?*

*If no, a discussion addressing the status of the ERP must be included in the Application attachment, in accordance with* Directive 065.

There are additional environmental and safety concerns that need to be addressed when the injection fluid contains any $H_2S$. Therefore, the EUB must ensure that the need for the ERP has been addressed and if one is required that the EUB Operations Group has approved an ERP that encompasses the proposed scheme prior to making a decision on an application.

YES means that an EUB-approved ERP incorporating the proposed scheme is in place.

NO means that either an EUB-approved ERP incorporating the proposed scheme is required but not in place or that an ERP is not required. For either situation, an explanation must be provided.

ERPs should be forwarded directly to the EUB Operations Group for review. See *Directive 071* for further details on emergency response planning.

*12) Will injection commence in all proposed injection wells within three months of receipt of approval?*

*If no, a discussion addressing the anticipated commencement of injection and the reason for the delay must be included in the Application attachment, in accordance with* Directive 065.

YES means that injection will begin within three months of the date of approval. This commencement of injection date will be a condition of the approval.

NO means that injection will not begin within three months of receipt of approval. Provide reasons for the delay in the commencement of the injection date beyond the standard three-month period. If injection will not begin within three months, the EUB

will generally not grant GPP at the time of the ER approval due to conservation concerns. The EUB may decide to grant GPP after written notification to the EUB that injection has begun.

***Proposed Approval Area***

This section must only be completed for new ER schemes and amendment types requesting to amend the approval area.

*13) Is the entire proposed approval area within the EUB's Pool Order boundary for the subject pool?*

YES means that the entire proposed approval area is within the EUB's current Pool Order boundary for the subject pool.

NO means that the proposed approval area extends beyond the EUB's current Pool Order boundary for the subject pool. The EUB cannot approve ER approval areas larger than the Pool Order boundary. Differences in pool delineation should be addressed prior to submission of the ER application. Note that the approval area will not include injectors without hydrocarbon pay, but such injectors may be listed in the approval.

The EUB's Pool Order boundaries are on the EUB's Web site under the Board Order System (BOS) at www.eub.ca.

*14) Does your interpretation of pool extent correspond to the EUB's Pool Order boundary for the subject pool?*

YES means that your interpretation of pool extent coincides with the area identified by the EUB's current Pool Order boundary for the subject pool.

NO means that your interpretation of pool extent does not coincide with the area identified by the EUB's current Pool Order boundary for the subject pool.

The EUB's Pool Order boundaries reflect quarter section for wells with oil pay and one section for wells with gas pay.

*15) Is the difference in pool delineation interpretation pertinent to the proposed ER scheme, in accordance with* Directive 065*?*

*Provide a discussion of the difference in pool delineation and the pertinence to the proposed ER scheme in the Application attachment, in accordance with* Directive 065.

A difference in pool delineation is considered pertinent if it affects any of the following aspects of the proposed ER scheme: approval area, approval conditions, notification, or approved injection wells.

Pool delineation is very important to the EUB's review of any ER scheme. The assessment of the effectiveness of the proposed scheme relative to the optimal depletion strategy for the entire pool requires that overall pool delineation be known. Also, accurate pool delineation is necessary to allow for the identification of possible equity concerns involved with the proposed ER scheme.

YES means that your pool interpretation differs from that of the EUB in a manner that could impact the ER approval. Significant differences in pool delineation must be dealt with in advance of making an ER scheme application. However, an exception may be where the proposed approval area is larger than the Pool Order boundary due to wells not yet being evaluated by the EUB.

NO means that your pool interpretation differs from that of the EUB in a manner that does not impact the ER approval. For example, the recognized differences are significantly outside of the proposed approval area.

If the proposed approval area extends beyond the EUB's Pool Order boundary for the subject pool or your interpretation of pool extent does not coincide with the EUB's Pool Order boundary for the subject pool, an explanation of the difference and a discussion of why this difference is not pertinent to the proposed ER scheme must be provided.

### *Scheme Details*

*16) Is the scheme area currently administered under good production practice (GPP)?*

YES means that all of the wells within the proposed approval area have been granted GPP.

NO means that some or all of the wells within the proposed approval area are subject to a prescribed maximum rate limitation (MRL) or that the proposed scheme is in a gas pool.

A copy of the most recent MRL Order can be found on the EUB's Web site.

*17) Will produced gas from the ER scheme area be conserved, in accordance with* Directive 060 *requirements?*

The EUB expects that gas conservation in accordance with *Directive 060* is occurring. See *Directive 060* for further information.

*18) What is the proposed voidage replacement ratio (VRR), on a monthly basis, for the scheme?*

*The EUB normally specifies a VRR of 1.0 to fully maintain reservoir pressure. If the VRR will not be 1.0, provide a technical justification in the Application attachment, in accordance with* Directive 065.

Specify the proposed monthly VRR for the scheme. The VRR should reflect the injection into and production from the total scheme area. Technical justification for a VRR other than 1.0 must be provided, along with the reason(s) for the over- or under-injection and its impact on scheme recovery. The EUB will normally specify a VRR as a condition of the approval.

*19) Is or will any gas-cap gas be produced from the subject pool during the operation of the ER Scheme?*

*If yes, include a discussion on the potential for fluid migration into the gas cap in the Application attachment, in accordance with* Directive 065.

YES means that gas-cap gas is or will be produced from the pool, either within or outside of the scheme area, during the period that the ER scheme is operational.

If any gas-cap gas is or will be produced from the subject pool during the operations of the ER scheme, provide a discussion on the potential for fluid migration from the scheme into the gas-cap and pressure depletion in the scheme due to gas-cap gas production. If potential for fluid migration or pressure depletion is identified, the discussion should include the impact on ultimate hydrocarbon recovery.

NO means either that there is no associated gas cap in the pool or that the associated gas cap will not be produced during the period that the ER scheme is operational.

*20) Is gas-cap gas currently being produced from the scheme area?*

YES means that an associated gas cap is present in the pool and this gas is currently being produced from the scheme.

NO means that an associated gas cap is present in the pool but this gas is not currently being produced from the scheme.

*20a) Has the appropriate concurrent production (CCP) approval been issued?*

If Question 20 is answered yes, gas-cap gas is currently being produced from the scheme area and this question must be answered.

YES means that the appropriate form of concurrent production that encompasses the current gas-cap gas production has been approved by the EUB. The CCP approval details are listed in the EUB's MRL Order.

NO means that the current gas-cap gas production has not been approved by the EUB.

*20b) An application for CCP is required. Has an application for CCP been registered?*

If Question 20a is answered no, the current gas-cap gas production has not been approved by the EUB and this question must be answered.

YES means that an application for CCP has been registered with the EUB.

NO means that an application for CCP has not yet been registered with the EUB. Unauthorized CCP is not permitted; an application for CCP is required pursuant to Section 39(1)(f) of the *Oil and Gas Conservation Act* and Section 2.4 of this directive.

*20c) If yes, provide the CCP application number.*

If Question 20b is answered yes, an application for CPP has been registered with the EUB and this question must be answered.

If an application for CCP has been registered, enter the EUB application number. Information details on applications registered with the EUB are on the EUB's Web site.

### C) Explanatory Notes for ER Scheme Application Attachments

**Application Attachment**

A text attachment providing a description of the proposed scheme that includes:

1) the proposed injection pattern,

2) the expected sweep efficiencies (e.g., vertical, areal)

3) the displacement type (e.g., bottom water drive, horizontal),

4) the measures taken to prevent channelling and to maximize the swept reservoir volume,

5) the proposed date of commencement of injection,

6) the approximate date when the proposed VRR will be achieved, and

7) the type, composition, and source of the injection fluid, including chase gas for miscible floods. For changing injection fluid compositions, provide the anticipated range of compositions; for nonsaline water injection, provide the water diversion permit number.

8) If an injection fluid contains any $H_2S$ and an ERP is required, a statement that an up-to-date ERP incorporating the proposed scheme is in place or a discussion addressing the status of the ERP update. If an EUB-approved ERP is not required for the proposed scheme as per *Directive 071* requirements, an explanation of why an ERP is not required.

9) If all of the proposed injection wells will not begin injection within three months of the approval date, include a discussion addressing the anticipated commencement of injection for each injection well and the reason for the delay.

   On-injection dates of up to six months from the date of approval may be considered by the EUB with sufficient justification, but the EUB will review and decide on each such application.

10) If your interpretation of pool delineation is different than the EUB's interpretation, as reflected by the current Pool Order boundary, include a discussion of the difference in pool delineation and why the difference is not pertinent to the proposed ER scheme. In cases where wells in the proposed scheme area have not yet been evaluated by the EUB, the wells requiring review should be identified.

11) If the proposed Voidage Replacement Ratio (VRR) is not 1.0 on a monthly basis, provide technical justification for a VRR other than 1.0, including the reason(s) for the over- or under-injection and its impact on scheme recovery. For example, if partial pressure maintenance is provided by an associated aquifer, include detailed analysis to show that the proposed VRR in combination with the aquifer will maintain reservoir pressure.

12) If any gas-cap gas is or will be produced from the subject pool during the operations of the ER scheme, provide a discussion on the potential for fluid migration from the scheme into the gas-cap and pressure depletion in the scheme due to gas-cap gas production. If potential for fluid migration or pressure depletion is identified, the discussion should include the impact on ultimate hydrocarbon recovery.

13) If any gas-cap gas is currently being produced from the proposed scheme area and the appropriate concurrent production approval does not exist, provide a discussion of your plans to submit a concurrent production application.

**Approval Area Map Attachment**

Map(s) showing

1) the EUB's current Pool Order boundary for the subject pool (http://www.eub.ca/portal/server.pt/gateway/PTARGS_0_0_269_231_0_43/http%3B/extContent/publishedcontent/publish/eub_home/industry_zone/industry_activity_and_data/bos___board_order_system/),

2) the location and current status (indicated by well symbols) of each well
   - within the proposed approval area and
   - within the notification area specified in Section 2.1.3.2,

   with wells completed in the pool highlighted,

3) the outline of other existing ER recovery scheme approval areas within the pool that offset the subject scheme, and

4) for a **new ER scheme**, include the applied-for approval area, and
   for an **ER amendment application,** include the current approval area and any proposed areas of amendment and the zero edge of the pool.

The proposed approval area must reflect the area anticipated to be swept by the scheme injectors and should conform to the EUB-approved drilling spacing units.

For clarity, the information may be provided on separate maps.

For very large pools, the map should focus on the region in and surrounding the scheme area.

For a new scheme, the net oil/gas pay isopach map(s) must be provided as a separate attachment. For scheme amendments, the pool zero edge in the region of the proposed scheme area must be provided.

**PVT Data Attachment**

Pressure-volume-temperature (PVT) properties, including

1) the initial reservoir pressure,
2) the proposed operating pressure of the scheme,
3) the current average reservoir pressure within the scheme area,
4) the saturation (bubble point) pressure,
5) the reservoir temperature,

6) the $B_{oi}$, $B_{gi}$ (if applicable), $R_{si}$, and $B_{wi}$ values,
7) the $B_o$, $B_g$, $R_s$, and $B_w$ values at the current average reservoir pressure within the scheme area, and
8) the source of the PVT data.

For gas cycling schemes, substitute the dew point pressure for item (4), and the full constant volume depletion analysis of the reservoir fluid for items (6) and (7).

All data must be in metric units.

Along with the stage of reserves recovery, the value of the bubble point or dew point relative to the current and proposed operating pressures is an important consideration when evaluating an ER scheme.

**Reserves Data Attachment**

Estimates of the oil and gas reserves, including

1) the initial oil and gas volumes in place for the ER scheme area,
2) the oil and gas recovery factors under the existing depletion mechanism and under the proposed ER scheme,
3) the recoverable oil and gas reserves for the scheme area,
4) the reservoir area, average net pay, average porosity, and average water saturation for oil and gas in the scheme area,
5) a description of the methods used in determining the estimates for (1) and (2) above (e.g., material balance, volumetric analysis, model study, a comparison of analog pools, and sweep and displacement efficiencies), and
6) for gas cycling schemes, the initial propane, butane, and condensate in place converted to liquid volumes.

A fundamental service that the EUB provides to all stakeholders is maintaining reserve estimates for all pools in Alberta.

A nominal level of reserves information is required in ER scheme applications, and more detail may be required for applications involving more complex ER processes. As well, additional information may be requested during the application review, after approval, or during a future audit.

**Licensee Concerns Attachment**

If there are any unresolved concerns from a well licensee, provide an attachment that includes the following:

1) contact information for the well licensee that has unresolved concerns/objections,
2) a copy of the notification letter provided to the well licensees,
3) a list of any other documents distributed,
4) a copy of written concerns and objections received, or if not available, a summary of issues,
5) a chronology of any discussions conducted with the well licensee(s),
6) a discussion of how the applicant would like the EUB to proceed with the application, and

7) any steps taken to mitigate the unresolved concerns and objections and the applicant's response to the concerns.

**Isopach Map Attachment** (for new ER schemes and significant area amendments)

An isopach map of net oil and/or gas pay showing

1) location of the initial fluid interfaces (gas-oil, gas-water, oil-water), and
2) location and current status (indicated by well symbols) of each well within and offsetting the proposed approval area.

The EUB requires the geological extent and hydrocarbon pay thickness of a pool, any fluid interfaces, and well control with statuses to assess how the proposed scheme relates to optimum pool depletion, other existing schemes, and potential pool delineation and equity issues.

For very large pools, the map should focus on the region in and surrounding the scheme area.

**Well Log(s) Attachment** (for new ER schemes and significant area amendments)

An interpreted and annotated log cross-section or representative well log(s) showing

1) stratigraphic interpretation of the zone(s) of interest,
2) interpretation of fluid interfaces (original and current, if applicable),
3) completion and treatments to the wellbore(s), with dates,
4) cumulative production,
5) finished drilling date and kelly bushing (KB) elevation, and
6) the scale of the log readings.

This cross-section may be presented in a number of ways—as one representative well log, several well logs, or a detailed cross-section of the entire pool—depending on the complexity and heterogeneity of the pool. The information on this cross-section assists in establishing the vertical continuity within the pool and the overall quality of the pool.

**Pressure Data and Interpretation Attachment** (for new ER schemes and significant area amendments)

Reservoir pressure data, including

1) measured or estimated reservoir pressures for the scheme area,
2) the source of the data, and
3) a discussion of how the pressure data relates to and supports the scheme operations.

The applicant must include all pressure data available for scheme wells. The data may be presented in various formats, such as a pressure-time plot, an isochronal map, or a table illustrating the pressures for the scheme wells. Pressure data should be corrected to the EUB-established pool datum.

All pressure data must be in metric units.

Reservoir pressure data are a key component to ensure the success and optimal operation of ER schemes. Taking timely and representative reservoir pressure measurements

assures that the necessary information is available to help monitor and optimize scheme performance. All new ER schemes will be added to the annual pressure survey schedule unless otherwise stated.

**Structure Map Attachment** (requirement for new gas cycling schemes)

A structure map of the subject pool clearly identifying interpreted fluid interfaces (current and original, if applicable), stratigraphic horizon, and contoured surface (porosity top or formation top).

If the proposed ER scheme is for a gas cycling scheme or an ER scheme where vertical displacement is important to evaluating the scheme design, a structure contour map must be provided.

### D) Additional Requirements for ER Scheme Amendment Applications

The requirements listed in this section are supplemental to the mandatory requirements and vary according to the type of amendment.

#### Add Injection Well Location(s)

Provide a technical explanation of why the additional injection location(s) are required and how they are consistent with the optimal depletion strategy to ensure that hydrocarbon recovery is maximized from the scheme area.

#### Amend Approval Area

Provide a written description of and technical justification for the proposed changes to the approval area. For a significant expansion to the area of an existing scheme, the EUB requires the isopach map, well log(s), and pressure data and interpretation attachments.

#### Amend Approval Conditions

Provide the specific details of and technical justification for the proposed changes to the approval conditions.

#### Scheme Termination

An application to rescind an ER approval is required to terminate an ER scheme. Generally, termination of the scheme involves ceasing all injection.

An application to rescind an ER approval must include

1) a discussion of the reason(s) for termination of the scheme, including how the pressure and production performance justifies the request for termination;
2) a detailed economic analyses to show that continued injection is uneconomic—the EUB may request further economic justification for scheme termination in certain cases;
3) a discussion of other scenarios, apart from ceasing injection completely, that were considered—for example, partial pressure maintenance, well recompletions, or workovers;
4) a discussion of the future depletion strategy for the approval area and the remaining recoverable reserves; and

5) a discussion of the success of the ER scheme, including the details of the actual incremental volumes by recovery mechanism (e.g., primary, waterflood, gas cycling, miscible flood).

**E) Additional Requirements for Miscible Flood Scheme Applications**

The requirements listed in this section are supplemental to the mandatory requirements and are specific to new miscible flood schemes. Amendments to existing miscible flood schemes should only address the requirements necessary to justify the request.

An application for a new miscible flood scheme must include

1) proof of miscibility with the reservoir oil, which usually requires slim tube or rising-bubble tests over a range of injection fluid compositions and/or pressures to establish the point or boundary of miscibility;

2) the proposed miscibility conditions, as appropriate, from the following:

   a) the minimum miscibility pressure (MMP) at the proposed composition of the injection fluid:

      The MMP is the lowest pressure for which the injection fluid can develop miscibility through a multicontact process with the given reservoir oil at reservoir temperature. To maximize oil recovery, the EUB may specify a minimum operating pressure (MOP) in the approval. The specified MOP will usually be nominally higher than the MMP to incorporate a safety factor for miscibility.

   b) a correlation of injection fluid composition versus operating pressure,

   c) the minimum pseudo-critical temperature of the injection fluid and MOP,

   d) the minimum C2+ content of the injected fluid and MOP, and

   e) other conditions to ensure miscibility;

3) for water alternating gas (WAG) schemes, the proposed WAG ratio target and range and WAG cycle, along with the technical justification; and

4) the methodologies proposed to be used to determine when injection fluid breakthrough occurs and to calculate the volumes of injection fluid breakthrough. Fluid sampling and analysis for miscible flood (MF) schemes must follow the requirements specified in *Informational Letter (IL) 92-5: Reduced Fluid Sampling and Analysis for Hydrocarbon Miscible Flood Schemes*, unless otherwise stated in the approval.

**F) Additional Requirements for Gas Cycling Scheme Applications**

If an operator considers gas cycling appropriate, an application for an ER scheme must be submitted. Amendments to an existing gas cycling scheme should only address the requirements necessary to justify the request. In addition to the requirements for an application for a new ER scheme, an application for a new gas cycling scheme must include

1) the proposed rate of cycling and the cycling period before blowdown commences with supporting technical and economic data;

2) the following historical and forecast annual production under various depletion strategies (including primary depletion, partial gas cycling, and full gas cycling):
   a) raw gas,
   b) sales gas,
   c) individual liquid coproducts, and
   d) sulphur;

   This performance information for gas cycling schemes should provide the basis for the economic evaluation used in determining the optimum depletion strategy.

3) the forecast annual gas injection showing the portion of make-up gas versus reinjected gas;

4) the composition of the current gas-cap gas, and the average composition of the injected gas on an annual basis;

5) the estimated liquid and sales gas recovery by the various depletion strategies compared to primary depletion; and

6) economic evaluation used to determine the optimum depletion strategy.

The quantification of natural gas liquids carried in the gas cap is of primary importance to the feasibility of the scheme.

### 2.1.4 ER Related Processes

#### 2.1.4.1 Reporting Requirements

Progress reports for most ER schemes (waterfloods and immiscible gas floods) were eliminated in EUB *IL 94-13: ERCB Progress Report Requirements—Conventional Enhanced Recovery Schemes*. Reporting is still required in the following situations for ER schemes:

- performance presentations and annual data submissions for active miscible flood schemes, in accordance with EUB *IL 96-2: Progress Report Requirements for Miscible Flood Schemes*,
- progress reports and/or performance presentations for gas cycling schemes,
- reporting required as a condition of an EUB approval or letter, and
- any reporting required as follow-up to EUB audit and surveillance processes, including reserve estimates.

#### 2.1.4.2 Audit, Surveillance, and Enforcement

The EUB will audit all new ER schemes and selected scheme amendments about six months after approval issuance. These audits will be conducted to

- confirm compliance with approval conditions,
- verify that the requirements of *Directive 051* have been met,

- review scheme performance (actual versus predicted) to identify any issues, and
- validate data integrity.

If issues arise, the EUB may request additional information or clarification from the approval holder, take appropriate enforcement action and require corrective measures necessary to protect the oil and gas resource, equity, safety, and the environment.

In addition to the six-month audit, the EUB will conduct surveillance on all provincial ER schemes on an ongoing basis. Random or targeted reviews may be conducted to ensure that compliance is met and that performance is consistent with expectations. If compliance or performance issues are identified, the EUB will take appropriate enforcement action and require the approval holder to implement corrective measures.

The EUB's current enforcement actions regarding ER schemes are set out in *Directive 019: EUB Compliance Assurance—Enforcement*.

## 2.2 Enhanced Oil Recovery Project

[Rescinded]

## 2.3 Enhanced Recovery Recognition and Good Production Practice for Enhanced and Oil Recovery Schemes

[Rescinded]

## 2.4 Application for Concurrent Production

### 2.4.1 Background

Concurrent production (CCP) is defined as the production of an oil accumulation and its associated gas cap at the same time. Section 39(1)(e) of the *Oil and Gas Conservation Act* requires that no CCP scheme may proceed unless approved by the EUB. CCP is a poolwide depletion decision requiring equitable treatment of all participants with productive wells.

### 2.4.2 When to Make This Application

If there is a need or desire to produce gas-cap gas either directly via a gas well or indirectly through oil zone perforations, application must be made to the EUB.

CCP approval can take the form of one or more of the following:

- outright CCP that allows for production of gas-cap gas from both oil and gas wells
- CCP where gas may be produced through the oil zone perforations only
- CCP with a maximum gas withdrawal rate
- CCP with a maximum gas-oil ratio (GOR) above which the wells must be shut in
- CCP where only certain wells may be produced
- CCP for specific areas of a pool

### 2.4.3 Terms of Approval

A CCP application would likely be approved if the EUB is satisfied that

1) gas-cap gas production would have a negligible impact on the ultimate oil recovery from the pool or that gas-cap gas production is unavoidable if oil is to be recovered from a given pool;

2) all gas production is or will be conserved; and

3) all potentially adversely affected parties in the pool agree with the proposed CCP scheme.

### 2.4.4 Requirements for an Application for Concurrent Production (file 3 copies)

**Conservation**

| Requirements | Comments |
|---|---|
| 1) Your geological interpretation of the pool involved, including | |
| a) oil and gas net pay isopach maps of the pool, | |
| b) where pool delineation or fluid interface locations are based on structural interpretation, a structure contour map of the pool and offsetting area, | |

| Requirements | Comments |
|---|---|
| c) an interpreted and annotated log cross-section or representative well log(s) showing the<br><br>i) stratigraphic interpretation of the zone(s) of interest,<br><br>ii) interpretation of the fluid interfaces present,<br><br>iii) completions and treatments to the wellbore(s) with dates,<br><br>iv) cumulative production,<br><br>v) finished drilling date and kelly bushing (KB) elevation, and<br><br>vi) the scale of the log readings, and<br><br>d) a tabulation of your interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | |
| 2) If you are applying for CCP through certain wells, a list of the wells proposed for CCP. | |
| 3) A statement of whether you have attempted recompletion efforts to reduce gas-cap gas production. If yes, state the results. If no, explain why not. | Gas cap production from oil wells may be reduced or eliminated by reperforating the well lower in the zone. |
| 4) Your evaluation of the oil and gas reserves for the pool, including<br><br>a) an estimate of the initial oil volume and gas volume in place,<br><br>b) an estimate of the oil and gas recovery factors under the existing depletion mechanism and under the proposed CCP depletion strategy,<br><br>c) a description of the methods used in determining (a) and (b) above (e.g., | The stage of depletion of the pool may influence the EUB's decision and should be discussed where appropriate. |

| Requirements | Comments |
|---|---|
| material balance, volumetric analysis,<br><br>model study, a comparison of analog pools), and<br><br>d) the supporting data used in determining (a) and (b) above and the sources of the data (e.g., pressure/volume/temperature [PVT] properties and source, pressure data and source). | |
| 5) An estimate of the current oil in place and gas in place and an estimate of the annual oil and gas production under CCP. | An understanding of the current stage of depletion of the subject pool and the future rate of depletion of the gas cap(s) and the oil zone is key to evaluating the appropriateness of CCP for a pool. |
| 6) An estimate of the gas cap segregation drive index, with supporting data and calculations. | Depending on its size relative to the associated oil pool, a gas cap can be a valuable source of pressure to the pool. |
| 7) A discussion of whether you plan any operational changes for the subject pool (such as infill drilling) and, if so, what they are. | Potential changes to a pool, such as infill drilling, pool expansion, and changes in production operations, can alter a pool significantly, and hence a decision on CCP would be deemed premature. |
| 8) Comments as to the feasibility of enhanced oil recovery and gas cycling if there is a retrograde condensate gas cap in the subject pool. | A request for CCP is premature if enhanced recovery or gas cap cycling are feasible but have not been implemented in the pool. |
| 9) Confirmation that all gas will be conserved; if this is not the case, a detailed discussion on the feasibility of gas conservation. | Except in cases where gas production is unavoidable, gas production would not generally be approved in the absence of gas conservation.<br><br>Your evaluation of gas conservation should use the decision tree and economic decision process set out in EUB *Directive 060*, Sections 2.3 and 2.4.<br><br>Under full gas conservation, only nonroutine flaring can occur. *Directive 060,* Section 2.6, defines nonroutine flaring at conserving facilities and specifies operational requirements to minimize this flaring. |

| Requirements | Comments |
|---|---|
| | Failure to address gas conservation in accordance with *Directive 060* may result in processing delays and deficiency requests. |
| 10) An estimate of the ultimate oil and gas recovery from the subject pool under the status quo and under the proposed CCP. | Approval of CCP is contingent upon the gas production having little or no negative impact on ultimate oil recovery from the given pool. |

**Equity**

| Requirements | Comments |
|---|---|
| 1) Documentation identifying notification to the unit operators, approval holders (if applicable), or well licensees in the EUB-designated pool. | CCP applications often involve complex oil and gas equity issues. Failure to notify others involved in the pool will result in the return of your application. |
| 2) Documentation confirming nonobjection from the above parties or specific details regarding objections or concerns. | |

## 2.5 Application for Pool Delineation and Ultimate Reserves

### 2.5.1 Background

The EUB establishes pool boundaries (vertically and horizontally) and assigns reserves to all oil and gas pools in Alberta. These are shown in Pool Orders (G Orders), annual reserve publications, and individual well and pool files. Well licensees of new oil wells outside of established G Orders must submit a completed application for a New Well Base Allowable or Base MRL (O-38 form).

The initial oil volume or gas volume in place for new pools is often based on simple building-block assignment areas and wellbore parameters. Initially, recovery factors for new pools may be based on analog pools in the area. Initial delineation reflects early geological and pressure information. As the pools are developed and further well data and performance data are available, delineation and reserves may be adjusted to reflect this new information. Net pay isopach maps, material balance analyses, decline analyses, and analytical and numerical models may take the place of the simple building-block approach. Different pressure trends or new gas/oil or oil/water interface information may alter pool boundaries.

The interpretation of pool reserves and delineation can affect regulatory requirements related to the operation and development of oil and gas pools in Alberta, as well as equity-related issues between operators.

### 2.5.2 When to Make This Application

Following the initial well assignment and if additional information becomes available that substantially changes current decisions, a well licensee may choose to, and in fact is encouraged to, make an application to change assigned reserves or vary pool delineation for several reasons, including

- **conservation** (For example, new evidence may permit a restricted gas well to produce if it is no longer within a gas cap or the second well in a DSU.)
- **equity** (For example, new evidence supports delineation for a well to a pool with a higher MRL or GPP.)
- **future applications** (For example, while reserves evaluations are required in many other applications in this directive, an applicant may choose to file a standalone reserve application. Maintaining a common reservoir information base or understanding differences may assist or accelerate processing future applications for matters addressed in this directive.)
- **provincial records** (For example, pool boundaries and reserves are the foundation for conservation and equity protection.)

The EUB monitors pool performance and interprets new well information. As a result, the EUB may also request well licensees to file reserve submissions to update reserves for pools of provincial significance.

### 2.5.3 How the EUB Processes the Application

Upon receipt of a standalone pool delineation or reserve application, the EUB analyzes the new evidence, reviews the applicant's interpretation, and assesses potential alternatives.

These applications are considered a technical information submission, and as such there are no specific requirements to notify and discuss the different interpretations with other well licensees.

The EUB may seek input on the delineation or reserve interpretation from well licensees in the area as part of the overall review. The EUB will consider all input prior to rendering a decision. This decision may not agree with the applicant, who may reapply as additional information becomes available.

### 2.5.4 Requirements for an Application for Pool Delineation (file 3 copies)

| Requirements | Comments |
|---|---|
| 1) The data and your interpretation, if the basis for proposing a pool delineation change is a specific, definitive piece of evidence. | There may be a sharp contrast in performance between wells, such as distinctly different pressure data, that conclusively supports delineation changes. Building-block reserves may be split or adjusted to reflect new boundaries. |
| 2) A detailed reserve submission, if the basis for proposing a pool delineation change is a composite of indicators. | Analysis of a set of data provides for identification of both supporting and refuting elements and a "best fit" decision. |

### 2.5.5 Requirements for an Application for Ultimate Reserves (file 3 copies)

| Requirements | Comments |
|---|---|
| 1) Your geological interpretation of the pool, including<br><br>a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool, | Your application must provide a geological interpretation of the entire pool, not just the portion underlying lands you own.<br><br>If it will help to clarify your basis for pool delineation or other aspects of your geological interpretation, you should submit a log cross-section containing wells both within and outside of the pool. As a minimum you must submit at least one representative well log from a well in the pool showing the information required in 1(c). |

| Requirements | Comments |
|---|---|
| b) where pool delineation or fluid interface locations are based on structural interpretation, a structure contour map of the pool and offsetting area, | |
| c) an interpreted and annotated log cross-section or representative well log(s) showing the<br>i) stratigraphic interpretation of the zone(s) of interest,<br>ii) interpretation of the fluid interfaces present,<br>iii) completions and treatments to the wellbore(s), with dates,<br>iv) cumulative production,<br>v) finished drilling date and kelly bushing (KB) elevation, and<br>vi) scale of the log readings, and | Your application will have fewer processing delays if you provide a clear picture of your geological interpretation, including the potential for further pool development. |
| d) a tabulation of your interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | |
| 2) Your evaluation of the oil and gas reserves for the pool, including<br>a) an estimate of the initial oil volume and gas volume in place,<br>b) an estimate of the oil and gas recovery factors,<br>c) a description of the methods used in determining (a) and (b) above (e.g., material balance, volumetric analysis, model study, a comparison of analog pools), and<br>d) the supporting data used in determining (a) and (b) above and the sources of the data (e.g., pressure/volume/temperature [PVT] properties and source, pressure data and source). | If there are sufficient pressure, production, and PVT data, a material balance evaluation should be done and compared to the volumetric results.<br><br>Failure to provide the calculation methods and supporting data will delay processing of your application.<br><br>It is not necessary to provide production plots for the wells, except to illustrate a particular point or issue (e.g., decline analysis, specific well performance issues). |

# Unit 3 Production Control

## 3.1 Commingled Production

### 3.1.1 Background

Historically, the standard practice for producing oil and/or gas in Alberta has been to maintain segregation between pools in the wellbore, unless otherwise approved by the EUB, in accordance with Sections 3.050 and 3.060 of the *Oil and Gas Conservation Regulations (OGCR)*. Reasons for this control include

- avoiding wellbore and/or reservoir conditions that may adversely affect resource recovery,
- maintaining the ability to gather data on an individual-pool basis for resource evaluation and reservoir management,
- ensuring operational safety, and
- ensuring the protection of non-saline groundwater.

While these reasons for segregated production remain valid, commingling of production from multiple pools in the wellbore following approval by the EUB is a longstanding practice in Alberta that has occurred over a wide range of formations and depths. The EUB recognizes that commingling maximizes conservation in many cases and is necessary for economic and orderly development of lower productivity resources.

Recognizing the advantages of commingled production for situations where there is low risk associated with the commingling, the EUB has implemented processes that allow commingling to occur subject to specific requirements being met. For higher risk situations, if the commingling of production from two or more pools in the wellbore is desired, an application for approval to commingle must be submitted to the EUB in accordance with Section 3.1.8 of *Directive 065*.

### 3.1.2 Processes for the Management of Commingled Production

Three processes exist for the management of commingled production in the wellbore:

- development entity (DE),
- self-declared (SD) commingling, and
- approval of an application in accordance with *Directive 065*.

If the proposed commingling does not meet the requirements for commingling through the DE or SD process, the licensee must obtain approval for the commingling through the application process (Figure 3.1 in Section 3.1.4).

### 3.1.3 EUB Expectations, Notification Requirements, and Compliance Assurance for All Commingled Production

#### 3.1.3.1 Commingled Operations

The EUB expects licensees to use good engineering practices when commingling production. This includes

- a good understanding of the reservoir and fluid properties prior to commingling;

- the collection of the appropriate reservoir data necessary to accurately assess and properly manage the reservoirs—this may exceed the minimum requirements prescribed by the EUB; and
- review of all commingled wells and pools on an ongoing basis to ensure continued adherence to the requirements that originally supported the onset of commingled production.

Licensees must comply with the requirements set out in Sections 3.1.3.5, 3.1.5, 3.1.6, and 3.1.8 of this directive and submit any additional data collected for reservoir management in accordance with Section 11.005 of the *OGCR*.

The EUB supports the water management objective of Alberta's *Water for Life: Alberta's Strategy for Sustainability* and stresses that a licensee must meet the requirements in *Directive 035: Baseline Water Well Testing Requirement for Coalbed Methane Wells Completed Above the Base of Groundwater Protection* and *Directive 044: Requirements for the Surveillance, Sampling, and Analysis of Water Production in Oil and Gas Wells Completed Above the Base of Groundwater Protection*.

### 3.1.3.2 Reporting and Administration of Commingled Production

The production from each well commingled in the wellbore in accordance with the DE or SD criteria must initially be reported through the Petroleum Registry of Alberta (Registry) using the DE or SD (commingled pool) code available on the Registry.

The EUB will evaluate all wells in which production is initially reported with a DE or SD code. A commingled production code based on the geological evaluation of the pools completed in the well will then be assigned to the production by the EUB to replace the DE or SD code for that well on the Registry. However, the creation of this new commingled pool code does not imply that other wells completed in the same pool(s) in the future may be commingled without further process. Each new well in which commingling is proposed through the DE or SD process must meet the DE or SD requirements, and production from the well must be reported to the Registry initially using the DE or SD code.

Commingled production resulting from approval of an application filed under Section 3.1.8 must be reported using the commingled pool code provided at the time of EUB approval.

### 3.1.3.3 Data Collection

Data collection requirements associated with commingling under the various processes are set out in Sections 7.025, 11.005, 11.070, 11.102, and 11.140 of the *OGCR* and in *Directive 040*.

The data collection requirements for gas production from coals and shales are set out in Sections 11.005, 11.040, 11.070, 11.102, 11.140, and 11.145 of the *OGCR* and in *Directive 040*. Section 7.025 of the *OGCR* requires control wells for gas production from coals and shales. These control well requirements must be met by all licensees that have gas production from coals or shales.

Compliance with all data requirements will be enforced in accordance with *Directive 019: EUB Compliance Assurance—Enforcement.*

### 3.1.3.4 Compliance Assurance

With the implementation of the new DE and SD processes, the EUB has substantially strengthened its surveillance, audit, and enforcement processes to ensure that it is more effective in identifying and dealing with potential unauthorized commingling and other related noncompliant situations. Enforcement action for any noncompliance with commingled production requirements will be in accordance with *Directive 019.* The EUB believes that it is prudent for licensees to proactively review their wells to ensure that all production operations are in compliance with the regulations and *Directive 065.* Licensees should disclose any instances of unauthorized commingling in accordance with the requirements of Section 6 of *Directive 019.*

If there is commingling without approval, a licensee may qualify to use the DE or SD process described in this section to restore compliance in lieu of submitting a complete application.

In some compliance situations, pool designation may be an issue. The operator or licensee, as defined in the *Oil and Gas Conservation Act*, must comply with the current EUB pool designation and is expected to make a technically sound assessment of pool interpretations.

Current EUB pool designation information may be found on the official site for EUB Field and Pool Orders at EUB Home:Industry Zone:Industry Activity and Data: BOS - Board Order System. Field and pool orders are updated monthly.

Further information about pool designations can be obtained by contacting the EUB by telephone at (403) 297-8311 (Customer Contact Centre) or by e-mail at EUB PoolDesignation@eub.ca.

If there are questions regarding pool interpretation in a compliance situation, the EUB will notify the licensee directly in writing. The licensee will have an opportunity to respond to new evidence or rulings on complex or unclear situations in four ways. The licensee may

- qualify to use the DE or SD process described in this section to restore compliance,
- segregate pools in the well,
- submit a complete commingling application under *Directive 065* requirements to restore compliance, or
- submit a technically supported pool delineation application in accordance with *Directive 065.*

Failure to respond within the specified timeframe to an EUB request regarding noncompliance or pool delineation issues results in enforcement action in accordance with *Directive 019.*

### 3.1.3.5 Notification Requirements for Commingling

A licensee or applicant must provide notification of commingling when using any of the three processes for the management of commingling: DE, SD, or application. The requirements for proper notification vary for each of the processes and must include well and interval details in accordance with the following requirements.

Sample notice letters for commingling are in Appendix B.

**A) Notice of Commingling When Using the DE or SD Process Before Unsegregated Completion of the Well**

If the lessors are not common for the different strata within the drilling spacing unit (DSU) where the wellbore proposed for commingling is located, the licensee must notify the Freehold mineral lessors of the proposed commingling a minimum of 15 working days prior to when it is anticipated the well would be completed to allow for commingled production. This notice must be provided regardless of whether the lessee ownership is common or pooled within the spacing unit. The notice must state that any concerns regarding the proposed completion are to be filed with the licensee. The licensee must make efforts to address the concerns raised to the satisfaction of the lessor(s) prior to completing the well.

If the licensee is unable to resolve the matters raised by the lessor(s), the production from the well may not be commingled using the DE or SD process. If commingling of production is desired in this situation, the licensee must make a full application in accordance with the Section 3.1.8. Any licensee making such an application will be required to address issues raised by the Freehold mineral lessor(s).

If the above-noted mixed [illegible]or ownership situation does not exist, a licensee is not required to provide advance notice to any party that it is proposing to commingle production in the wellbore.

Refer to the Explanatory Notes in Section 3.1.7 for information on

- disputes regarding the proposed commingling,
- varying interests, and
- off-target wells.

**B) Notice of Commingling When Using the DE or SD Processes After Unsegregated Completion of the Well**

A licensee or applicant must provide notification of commingling when using any of the three processes for the management of commingling - DE, SD, or application. The requirements for proper notification varies for each of the processes and must include well and interval details in accordance with the following requirements.
A licensee that has commingled production using the DE or SD processes must provide notice of the commingling, at the minimum, to the licensees of all wells, other than abandoned wells, and to all Freehold mineral lessors in the standard DSU of the well in which commingling has occurred and the eight standard DSUs immediately offsetting the well in which commingling has occurred. In addition, the licensee must make a

judgement as to whether parties outside specified areas may be directly and adversely affected and, if so, provide notification to those parties also.

Notice is to be provided within 30 days from the onset of commingling, unless prior notice was provided to the party in accordance with subsection (A) above.

Refer to the Explanatory Notes in Section 3.1.7 for information on

- disputes regarding commingling,
- varying interests, and
- off-target wells.

**C) Notice of Commingling When Using the Application Process**

The applicant must provide a minimum response period of 15 working days from the date the notification letter is mailed. The response period must be complete for all parties notified prior to the application for commingling being filed with the EUB. Consent from notified parties is not required. However, the EUB expects applicants to engage in meaningful discussions with any stakeholder that has raised concerns or questions. The EUB expects that applicants will make reasonable efforts to resolve matters prior to filing an application.

The parties to be notified are different depending on the situation involved. Notification must be conducted as set out in Table 3.1. The applicant may be required to complete the notification requirements in more than one of the categories to address all the circumstances involved in the situation.

**Table 3.1 Notification Requirements for Commingling Applications**

| If you are applying for commingling because | You must send notice of the proposed commingling at minimum to |
|---|---|
| 1) the proposed commingling is for a situation where<br>• there is actual or anticipated water production equal to or greater than 5 $m^3$/month in a well with perforations above the base of groundwater protection (BGWP),<br>• there are unresolved equity issues with respect to the proposed commingling,<br>• the production proposed for commingling includes gas from coals or shales outside a DE, or<br>• there is a water well within a 600 m radius with a total depth less than 25 m from the top of the perforations of the well proposed for commingling. | • well licensees of nonabandoned wells in the standard[1] DSU where the subject well is located and in the eight standard DSUs offsetting the subject well,<br>• Freehold lessors in the standard DSU where the subject well is located and in the eight standard DSUs offsetting the subject well, and<br>• the owner(s) of water well(s) within the 600 m radius and 25 m depth. |
| 2) the proposed commingling is for a situation where<br>• the reservoir pressure of a pool or interval proposed for commingling exceeds 90 per cent of the lesser of the closure or breakdown fracture pressure of one of the other pools or intervals proposed for commingling, or<br>• the well is in a designated oil sands area or is in a pool overlapping a designated oil sands area. | • well licensees of nonabandoned wells in the area of the smaller of the pools proposed for commingling and in the standard DSUs offsetting the smaller of the pools,[2] or if the smaller pool is a single-well pool, in the standard DSU where the subject well is located and in the eight standard DSUs offsetting the subject well, and<br>• Freehold lessors in the area of the smaller of the pools proposed for commingling and in the standard DSUs offsetting the smaller of the pools, or if the smaller pool is a single-well pool, in the standard DSU where the subject well is located and in the eight standard DSUs offsetting the subject well. |
| 3) the proposed commingling is for a situation where<br>• the commingled stream contains $H_2S$,<br>• the commingled stream contains oil, associated gas, and/or nonassociated gas,<br>• there are two or more oil pools with production greater than 3 $m^3$/day from any well in any pool,<br>• there is a pool(s) subject to an existing or proposed enhanced recovery scheme, or<br>• commingling of production would address an operational issue not specifically detailed in this directive. | • well licensees of nonabandoned wells in the pools proposed for commingling,[3] and<br>• Freehold lessors in the area of the smaller of the pools proposed for commingling and in the standard DSUs offsetting the smaller of the pools, or if the smaller pool is a single-well pool, in the standard DSU where the subject well is located and in the eight standard DSUs offsetting the subject well. |
| 4) the proposed commingling is for an area. | • well licensees of nonabandoned wells in the area of application and in the standard DSUs offsetting the area of application, and<br>• Freehold lessors in the area of application and in the standard DSUs offsetting the area of application. |

[1] For a gas well, a standard DSU is one section; for an oil well, a standard DSU is one quarter section. If the proposed commingling mixes oil and gas, notice must be provided for the larger DSU involved.

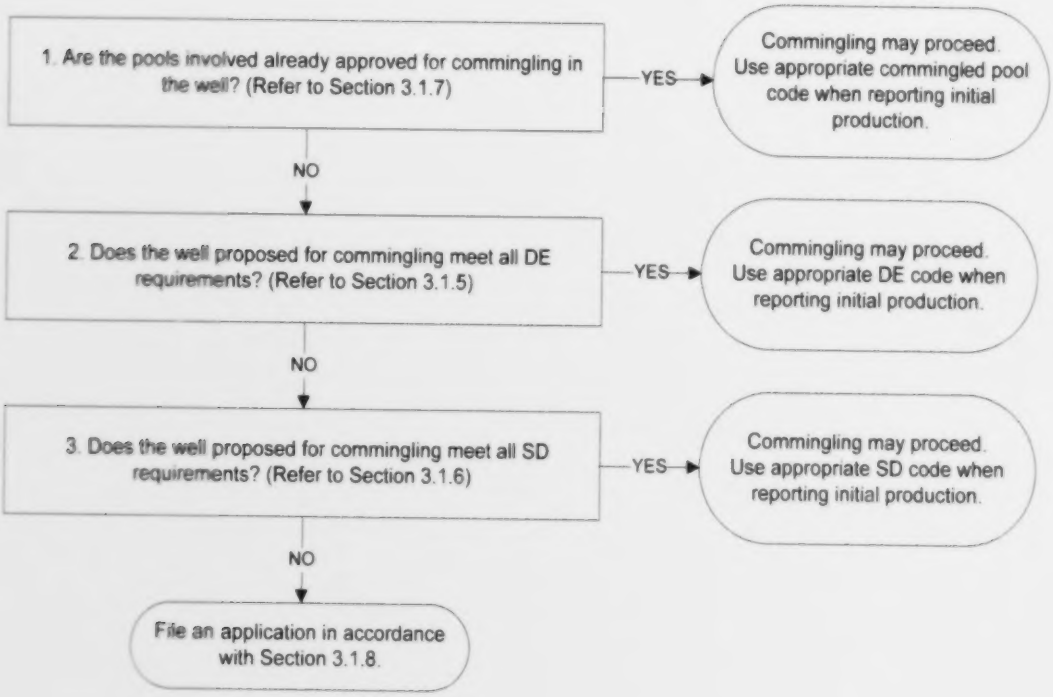
[2] Area of pool as defined by EUB, or if the EUB has not defined the pool when the notice is provided, the area of the pool as interpreted by the applicant. The EUB may request the applicant to provide notice to additional parties if during the evaluation of the application the EUB interprets the pool area to be larger than interpreted by the applicant.

[3] If a pool involved is extremely large, the applicant must make a judgement as to what area of the pool should be covered in the notification. This judgement would involve an assessment of which parties might be impacted by the proposed commingling. The EUB may request the applicant to provide notice to additional parties if the EUB considers that insufficient notice was provided.

### 3.1.4 Determination of Commingling Process to Use

A determination of which commingling process to use—DE, SD, or the application process—can be made using the decision tree in Figure 3.1.

Figure 3.1. Decision Tree to Determine Process to Commingle Production


1. Are the pools involved already approved for commingling in the well? (Refer to Section 3.1.7)
YES
Commingling may proceed. Use appropriate commingled pool code when reporting initial production.
NO
2. Does the well proposed for commingling meet all DE requirements? (Refer to Section 3.1.5)
YES
Commingling may proceed. Use appropriate DE code when reporting initial production.
NO
3. Does the well proposed for commingling meet all SD requirements? (Refer to Section 3.1.6)
YES
Commingling may proceed. Use appropriate SD code when reporting initial production.
NO
File an application in accordance with Section 3.1.8.

### 3.1.5 Unsegregated Gas Production Within a DE

A DE is an EUB-defined entity consisting of multiple stacked formations in a specific area where there is an adequate understanding of the resources to allow commingled production of these formations to be the standard development practice. The EUB has established DEs where commingled production of multiple pools over a large area is already occurring and there is minimal risk that unsegregated production will negatively affect conservation or the environment. A DE is administered as a single commingled pool by the EUB, although individual formation-based contributing pools within the DE will be identified on the EUB's Board Order System (BOS). EUB Orders No. DE 2006-1 and DE 2006-2 show the geographic area and stratigraphic intervals for the two DEs that have been established. These orders are available on the EUB Web site www.eub.ca under Industry Zone/Rules Regulations Requirements/Management of Commingling.

If a licensee meets the requirements set out in Section 3.051(1) of the *OGCR* and in this unit, unsegregated gas production from a DE may commence at a well without an application being filed or an EUB approval being issued. Each well commingled in a DE must meet all DE requirements and report unsegregated production using the DE code.

Data requirements for wells with production commingled in the wellbore under the DE process include those set out in Sections 11.005, 11.070, 11.102, and 11.140 of the *OGCR* and in *Directive 040: Pressure and Deliverability Testing Oil and Gas Wells—Minimum Requirements and Recommended Practices*.

The data collection requirements for gas production from coals and shales are set out in Sections 11.005, 11.040, 11.070, 11.102, 11.140, and 11.145 of the *OGCR* and in *Directive 040*. Section 7.025 of the *OGCR* requires control wells for the production of coalbed methane (CBM) and shale gas. These control well requirements must be met by all licensees that have gas production from coals or shales.

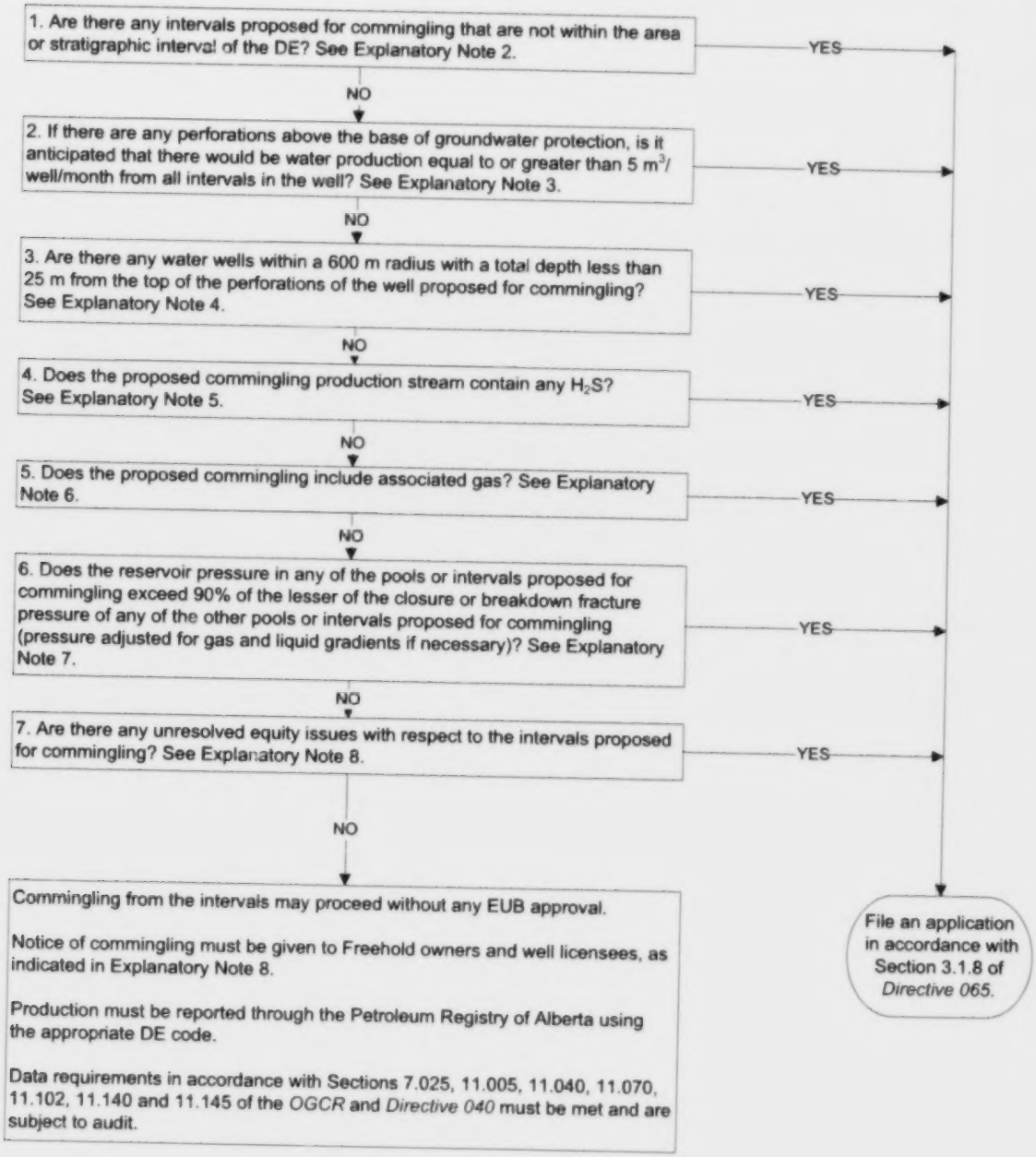
### 3.1.5.1 Requirements for Commingling of Gas Production in a DE

The following are the specific requirements set out in Section 3.051(1) of the *OGCR* that must be met before **nonassociated gas** production may be undertaken without segregation in the wellbore under the DE process:

1) There are no completions above or below the stratigraphic interval of the DE.
2) Anticipated or actual water production is less than 5.0 $m^3$/month if there are completions above the base of the BGWP.
3) The top of the completions is more than 25 m below the base of any water well within 600 m of the producing well.
4) There is no $H_2S$ in the production stream.
5) The licensee has resolved any concerns of lessors or lessees of the mineral rights whose rights may be directly and adversely affected by the unsegregated production.
6) The reservoir pressure of any interval completed for production does not exceed 90 per cent of the fracture pressure of any other interval completed for production.
7) There is no production of gas associated with an oil accumulation.

Requirements respecting notification of commingling in accordance with the DE process are included in Section 3.1.3.5. For other additional information, refer to the decision tree in Figure 3.2 and the explanatory notes in Section 3.1.7.

Figure 3.2 Decision Tree for the Commingling of Gas Production from Intervals Within a Development Entity (DE)


1. Are there any intervals proposed for commingling that are not within the area or stratigraphic interval of the DE? See Explanatory Note 2.
YES
NO
2. If there are any perforations above the base of groundwater protection, is it anticipated that there would be water production equal to or greater than 5 $m^3$/well/month from all intervals in the well? See Explanatory Note 3.
YES
NO
3. Are there any water wells within a 600 m radius with a total depth less than 25 m from the top of the perforations of the well proposed for commingling? See Explanatory Note 4.
YES
NO
4. Does the proposed commingling production stream contain any $H_2S$? See Explanatory Note 5.
YES
NO
5. Does the proposed commingling include associated gas? See Explanatory Note 6.
YES
NO
6. Does the reservoir pressure in any of the pools or intervals proposed for commingling exceed 90% of the lesser of the closure or breakdown fracture pressure of any of the other pools or intervals proposed for commingling (pressure adjusted for gas and liquid gradients if necessary)? See Explanatory Note 7.
YES
NO
7. Are there any unresolved equity issues with respect to the intervals proposed for commingling? See Explanatory Note 8.
YES
NO
Commingling from the intervals may proceed without any EUB approval.
Notice of commingling must be given to Freehold owners and well licensees, as indicated in Explanatory Note 8.
Production must be reported through the Petroleum Registry of Alberta using the appropriate DE code.
Data requirements in accordance with Sections 7.025, 11.005, 11.040, 11.070, 11.102, 11.140 and 11.145 of the *OGCR* and *Directive 040* must be met and are subject to audit.
File an application in accordance with Section 3.1.8 of *Directive 065*.

### 3.1.6 SD Unsegregated Production

If a licensee meets the requirements set out in Sections 3.051(2) and (3) of the *OGCR* and in this unit, unsegregated gas production may commence using the SD process without an application being filed or an EUB approval being issued. Each well commingled using this process must meet all SD requirements and report unsegregated production using the SD code.

The SD process is for commingling of production from gas pools only or oil pools only. Commingled production from gas and oil pools in the same wellbore is not permitted under this process and requires a commingling application. The SD commingling process has limited applicability with respect to oil production at present, being available for use with only very low-rate oil wells. Also, the SD process may not be used if the proposed commingling involves any $H_2S$, gas production from coal or shale, or wells in a designated oil sands area or in a pool that overlaps into a designated oil sands area.

Production from a well completed within a DE may be commingled with production from intervals above or below the stratigraphic intervals of the DE using the SD process, provided that all requirements for SD commingling are met.

Data collection requirements associated with commingling under the SD process are set out in Sections 11.005, 11.070, 11.102, and 11.140 of the *OGCR* and in *Directive 040*. The SD commingling process is the same for all situations, but well testing requirements vary for gas wells depending on the well flow rate, as set out in *Directive 040*.

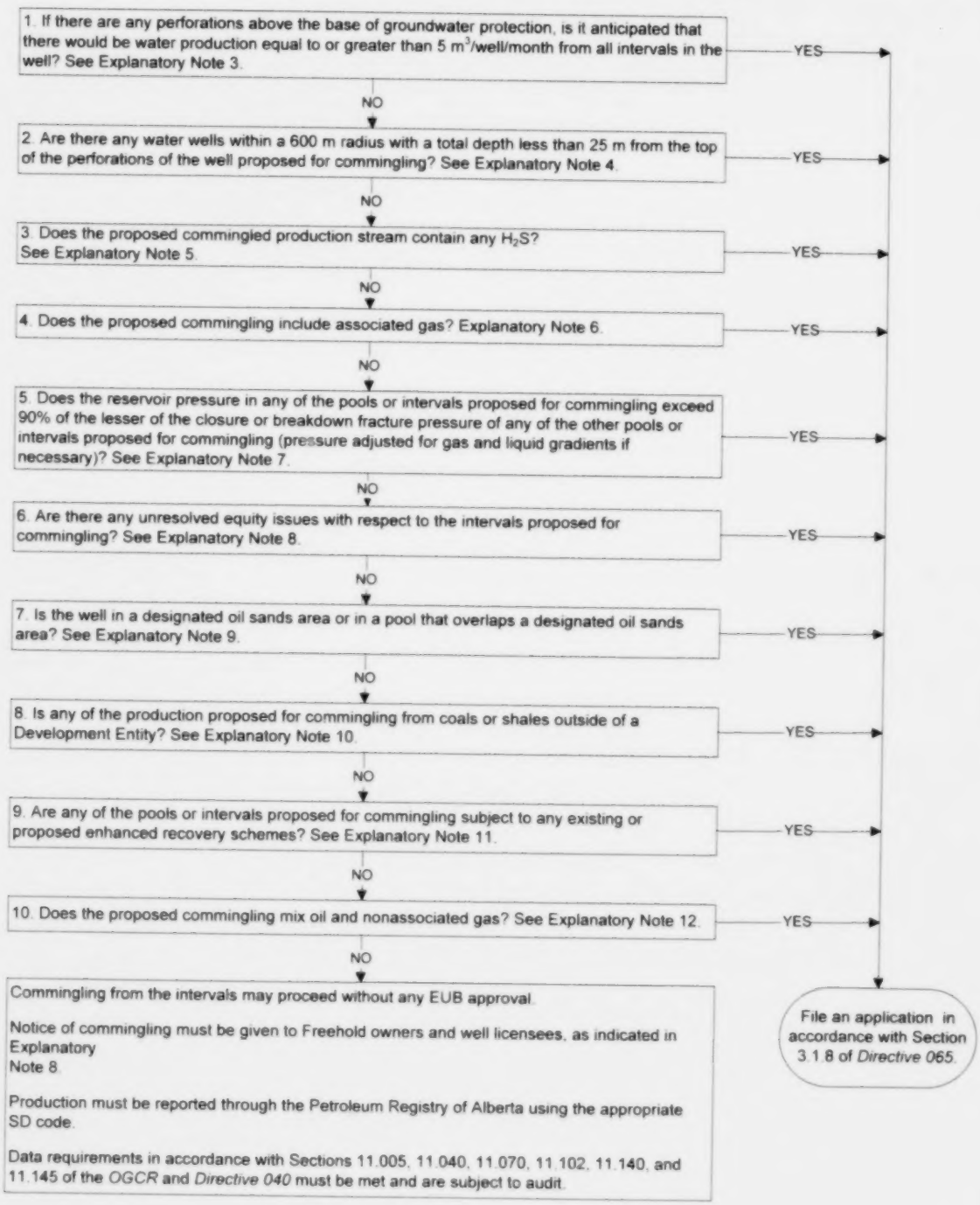
#### 3.1.6.1 Requirements for SD Commingling of Gas Production

The following are the specific requirements set out in Section 3.051(2) of the *OGCR* that must be met before **nonassociated gas** production may be undertaken without segregation in the wellbore under the SD process:

1) Anticipated or actual water production is less than 5.0 $m^3$/month if there are completions above the base of the groundwater protection.
2) The top of the completions is more than 25 m below the base of any water well within 600 m of the producing well.
3) There is no $H_2S$ in the production stream.
4) The licensee has resolved any concerns of lessors or lessees of the mineral rights whose rights may be directly and adversely affected by the unsegregated production.
5) The reservoir pressure of any interval completed for production does not exceed 90 per cent of the fracture pressure of any other interval completed for production.
6) There is no production of gas associated with an oil accumulation.
7) The well is not in a designated oil sands area or in a pool that overlaps a designated oil sands area.
8) There is no production of gas from coal or shale outside a DE.
9) The pools or intervals are not subject to any existing or proposed enhanced recovery scheme.

For additional information, refer to the decision tree in Figure 3.3 and the explanatory notes in Section 3.1.7.

Figure 3.3. Decision Tree to Determine If the Proposed Commingling Is a Candidate for Self-Declared Gas Commingling in a Well


1. If there are any perforations above the base of groundwater protection, is it anticipated that there would be water production equal to or greater than 5 m3/well/month from all intervals in the well? See Explanatory Note 3.
YES
NO
2. Are there any water wells within a 600 m radius with a total depth less than 25 m from the top of the perforations of the well proposed for commingling? See Explanatory Note 4.
YES
NO
3. Does the proposed commingled production stream contain any H2S? See Explanatory Note 5.
YES
NO
4. Does the proposed commingling include associated gas? Explanatory Note 6.
YES
NO
5. Does the reservoir pressure in any of the pools or intervals proposed for commingling exceed 90% of the lesser of the closure or breakdown fracture pressure of any of the other pools or intervals proposed for commingling (pressure adjusted for gas and liquid gradients if necessary)? See Explanatory Note 7.
YES
NO
6. Are there any unresolved equity issues with respect to the intervals proposed for commingling? See Explanatory Note 8.
YES
NO
7. Is the well in a designated oil sands area or in a pool that overlaps a designated oil sands area? See Explanatory Note 9.
YES
NO
8. Is any of the production proposed for commingling from coals or shales outside of a Development Entity? See Explanatory Note 10.
YES
NO
9. Are any of the pools or intervals proposed for commingling subject to any existing or proposed enhanced recovery schemes? See Explanatory Note 11.
YES
NO
10. Does the proposed commingling mix oil and nonassociated gas? See Explanatory Note 12.
YES
NO
Commingling from the intervals may proceed without any EUB approval.
Notice of commingling must be given to Freehold owners and well licensees, as indicated in Explanatory Note 8.
Production must be reported through the Petroleum Registry of Alberta using the appropriate SD code.
Data requirements in accordance with Sections 11.005, 11.040, 11.070, 11.102, 11.140, and 11.145 of the OGCR and Directive 040 must be met and are subject to audit.
File an application in accordance with Section 3.1.8 of Directive 065.

### 3.1.6.2 Requirements for SD Commingling of Oil Production

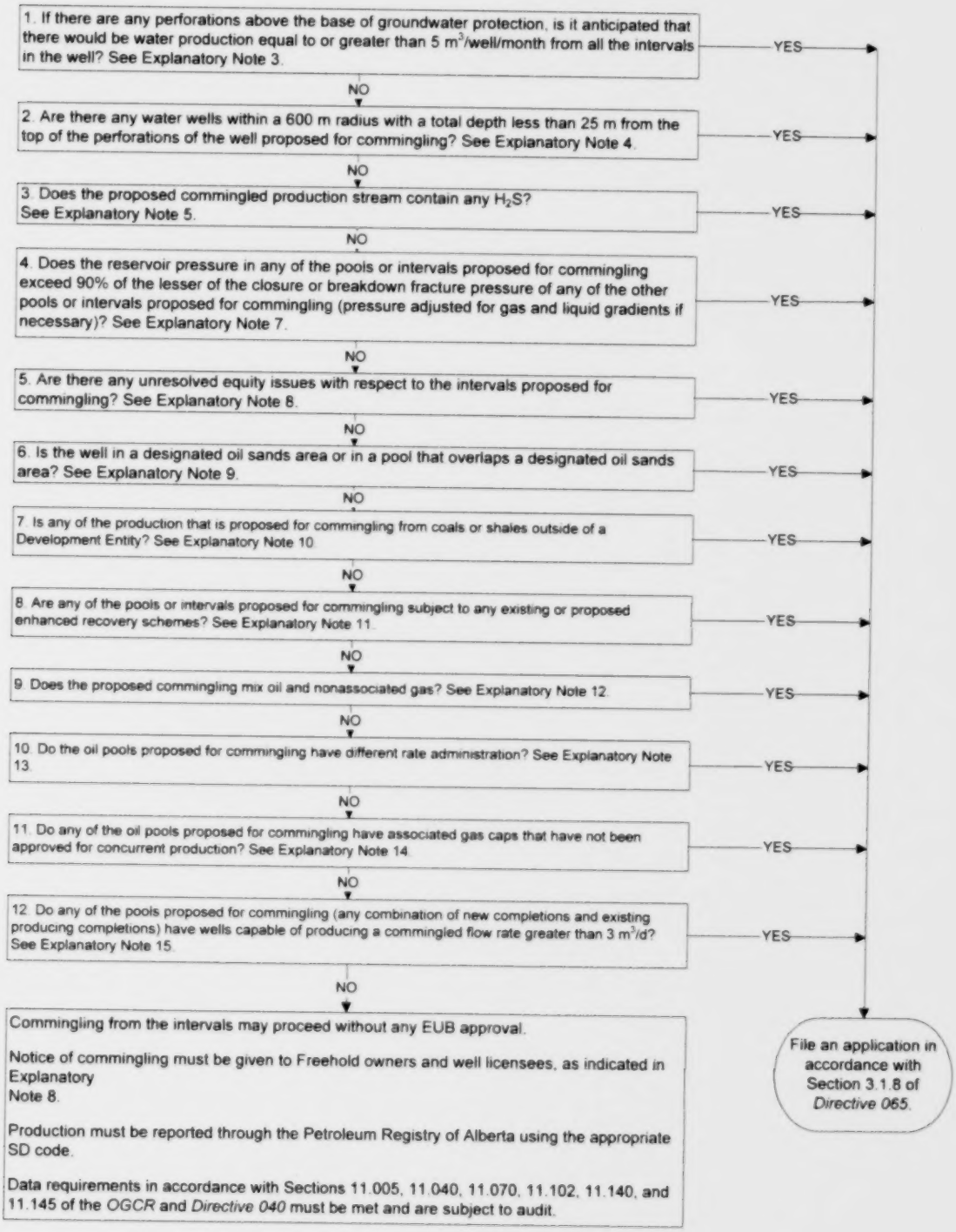
The SD commingling process has limited applicability with respect to oil production at present, being available for use with only low rate oil wells. Also, while the commingling of oil production under the SD process is on a well-by-well basis, as it is for all SD commingling, the production rate of all other oil wells in the pools involved with the SD commingling must be taken into consideration, as noted in requirement 12 below, prior to proceeding with using the SD process for the commingling of oil production. This measure is in effect to ensure that resource conservation issues associated with higher productivity oil pools are considered through an application in accordance with Section 3.1.7 prior to commingling commencing in the pools.

A licensee must meet the following requirements set out in Section 3.051(3) of the *OGCR* before **oil** production may be undertaken without segregation in the wellbore under the SD process:

1) Anticipated or actual water production is less than 5.0 $m^3$/month if there are completions above the BGWP.
2) The top of the completions is more than 25 m below the base of any water well within 600 m of the producing well.
3) There is no $H_2S$ in the production stream.
4) The licensee has resolved any concerns of lessors or lessees of the mineral rights whose rights may be directly and adversely affected by the unsegregated production.
5) The reservoir pressure of any interval completed for production does not exceed 90 per cent of the fracture pressure of any other interval completed for production.
6) The well is not in a designated oil sands area or in a pool that overlaps a designated oil sands area.
7) There is no production of gas from coal or shale outside a DE.
8) The pools or intervals are not subject to any existing or proposed enhanced recovery scheme.
9) There is no production of gas that is not associated with an oil accumulation.
10) The oil pools have the same rate administration.
11) There are no oil pools that have associated gas caps that have not been approved for concurrent production.
12) The unsegregated flow rate of every well in the pools proposed for commingling is less than 3 $m^3$/day when calculated over 3 consecutive months of production. (This means that the average operating day flow rate of the commingled well for the last 3 calendar months of production—total production for last 3 months with production / total hours on production during those 3 months x 24 hours/day—immediately preceding the well being commingled under the SD process is less than 3.0 $m^3$/operating day, and the flow rate of every well in the pools involved with the SD commingling of the well is also less than 3.0 $m^3$/operating day when calculated in the same manner.)

For additional information, refer to the decision tree in Figure 3.4 and the explanatory notes in Section 3.1.7.

## Figure 3.4. Decision Tree to Determine If the Proposed Commingling Is a Candidate for Self-Declared Oil Commingling in a Well


1. If there are any perforations above the base of groundwater protection, is it anticipated that there would be water production equal to or greater than 5 $m^3$/well/month from all the intervals in the well? See Explanatory Note 3.
YES
NO
2. Are there any water wells within a 600 m radius with a total depth less than 25 m from the top of the perforations of the well proposed for commingling? See Explanatory Note 4.
YES
NO
3. Does the proposed commingled production stream contain any $H_2S$? See Explanatory Note 5.
YES
NO
4. Does the reservoir pressure in any of the pools or intervals proposed for commingling exceed 90% of the lesser of the closure or breakdown fracture pressure of any of the other pools or intervals proposed for commingling (pressure adjusted for gas and liquid gradients if necessary)? See Explanatory Note 7.
YES
NO
5. Are there any unresolved equity issues with respect to the intervals proposed for commingling? See Explanatory Note 8.
YES
NO
6. Is the well in a designated oil sands area or in a pool that overlaps a designated oil sands area? See Explanatory Note 9.
YES
NO
7. Is any of the production that is proposed for commingling from coals or shales outside of a Development Entity? See Explanatory Note 10.
YES
NO
8. Are any of the pools or intervals proposed for commingling subject to any existing or proposed enhanced recovery schemes? See Explanatory Note 11.
YES
NO
9. Does the proposed commingling mix oil and nonassociated gas? See Explanatory Note 12.
YES
NO
10. Do the oil pools proposed for commingling have different rate administration? See Explanatory Note 13.
YES
NO
11. Do any of the oil pools proposed for commingling have associated gas caps that have not been approved for concurrent production? See Explanatory Note 14.
YES
NO
12. Do any of the pools proposed for commingling (any combination of new completions and existing producing completions) have wells capable of producing a commingled flow rate greater than 3 $m^3$/d? See Explanatory Note 15.
YES
NO
Commingling from the intervals may proceed without any EUB approval.
Notice of commingling must be given to Freehold owners and well licensees, as indicated in Explanatory Note 8.
Production must be reported through the Petroleum Registry of Alberta using the appropriate SD code.
Data requirements in accordance with Sections 11.005, 11.040, 11.070, 11.102, 11.140, and 11.145 of the *OGCR* and *Directive 040* must be met and are subject to audit.
File an application in accordance with Section 3.1.8 of *Directive 065*.

### 3.1.7 Explanatory Notes to Determine If the DE or SD Processes May Be Utilized

*1. Are the pools involved already approved for commingling in the well?*

To answer this question, the list of pools approved for commingling, as identified in the field-based MU orders, must be checked. An evaluation needs to be made as to whether each productive interval in the well proposed for commingling is currently part of an existing pool as defined by the EUB. If each interval proposed for commingling is within the boundaries of existing pools as defined at the time the licensee is conducting its evaluation and these pools are already approved for commingling, production from the pools may be commingled in the subject well without any notice to the EUB. Commingled production must be reported to the Registry using the existing commingled production code for the pools involved.

If at the time of the evaluation, the pools in the well have not been approved for commingling as set out in the field-based MU orders, the licensee may proceed to use the DE or SD decision tree to determine whether the well is a candidate for commingling through the DE or SD process. If the well is a candidate for commingling using the DE or SD process, production may be commingled in the wellbore immediately. Commingled production must be reported to the Registry using the DE or SD code available for each field, and the licensee must operate within the DE and SD criteria at all times. If the proposed commingling does not meet the criteria for either DE or SD commingling and commingling is desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*2. Are there any intervals proposed for commingling that are not within the area or stratigraphic interval of the DE?*

To answer this question, the licensee must confirm if the well and intervals proposed for commingling are within the area and stratigraphic interval of the related DE. This information is provided on the order for each DE, which is available on the EUB Web site www.eub.ca under Industry Zone/Rules Regulations Requirements/Management of Commingling in the Wellbore. If the well is outside the area of the DE or there are any perforated intervals within the wellbore that are outside the stratigraphic interval of the DE, the well is not permitted to commingle production under the DE process. If commingling of production is desired in this circumstance, the licensee may proceed to the SD decision tree and determine if the proposed commingling meets the criteria for SD commingling. If the proposed commingling does not meet the criteria for either DE or SD commingling and commingling is desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*3. If there are any perforations above the BGWP, is it anticipated that there would be water production equal to or greater than 5 m3/well/month from all intervals in the well?*

A licensee may determine whether any interval proposed for commingling is above BGWP from the data provided in EUB *ST55: Alberta's Base of Groundwater Protection (BGWP) Information*.

The volume of 5 $m^3$/well/month is proposed as a practical cutoff to allow for small volumes of water, including water of condensation that may periodically need to be cleaned out of the well.

If it is anticipated that water volumes equal to or greater than 5 $m^3$/well/month could be produced from any or all intervals in the well that has perforations above the BGWP, a licensee may not commingle production using the DE or SD process.

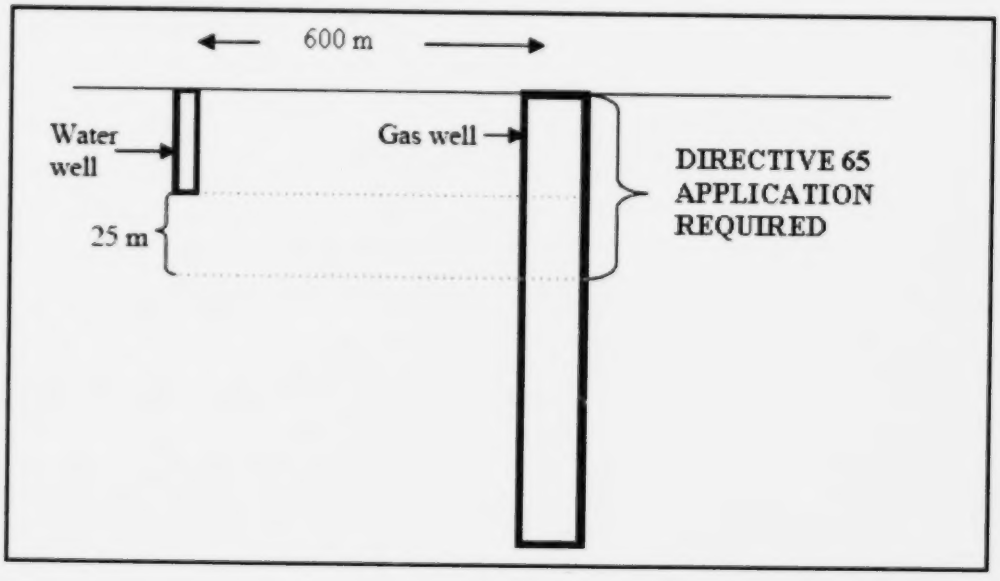
If an existing well that is to be recompleted for commingled production has produced greater than 5 $m^3$/well/month of water from the well in any of the last 12 months, a licensee may not commingle production using the DE or SD process.

If the licensee wishes to commingle production in this circumstance, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted. The application must provide a case that water produced with commingled production will not contaminate groundwater or adversely impact the recovery of gas from coals. Licensees should note that commingling of production in wells with completions above the BGWP that have actual or anticipated water production equal to or greater than 5 $m^3$/month conflicts with *Directive 044*.

Licensees must also ensure that operations comply with the AENV *Water Act*, taking particular note that non-saline water may not be produced without a groundwater diversion permit, non-saline aquifers may not be mixed, and saline and non-saline aquifers may not be mixed.

*4. Are there any water wells within a 600 m radius with a total depth less than 25 m from the top of the perforations of the well proposed for commingling?*

This requirement has consideration for *Directive 027: Shallow Fracturing Operations—Interim Controls, Restricted Operations, and Technical Review* and for AENV's *Standard for Baseline Water—Well Testing for Coalbed Methane/Natural Gas in Coal Operations, April 2006*. If the situation as illustrated below exists, the licensee may not commingle production using the DE or SD process. If the licensee wishes to commingle production in this circumstance, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.



*5. Does the proposed commingled production stream contain any $H_2S$?*

Gas or oil with any $H_2S$ content greater than 0.00 mole/kilomole is considered to contain $H_2S$. This is consistent with Table 7.1 in *Directive 056: Energy Development Applications and Schedules*.

A licensee may not commingle gas or oil production containing $H_2S$ using the DE or SD process. If commingling of production is desired in this situation, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*6. Does the proposed commingling include associated gas?*

Commingling of associated gas and nonassociated gas may not occur using the DE or SD (gas) process. If the licensee wishes to commingle any nonassociated gas with associated gas, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*7. Does the reservoir pressure in any of the pools or intervals proposed for commingling exceed 90 per cent of the lesser of the closure or breakdown fracture pressure of any of the other pools or intervals proposed for commingling (pressure adjusted for gas and liquid gradients if necessary)?*

Closure pressure is the pressure needed to open and/or extend a fracture resulting from previous stimulation operations. Breakdown pressure is the pressure needed to initially fracture a reservoir during stimulation operations.

Having extreme pressure differences between pools proposed for commingling raises a safety issue in that wellbore control may be jeopardized if fluid from a high-pressured reservoir flows into a lower-pressured reservoir that has a well completion or wellhead equipment not designed for such high pressures. Another concern about the commingling of production from pools with extreme pressure differences arises when a new well is drilled into a pool that has an unusually high pressure due to cross-flow from a commingled completion; this raises a safety issue in that the party drilling nearby may not anticipate the higher pressure.

The onus is on the licensee to evaluate this issue. If the reservoir pressure in any of the pools proposed for commingling exceeds 90 per cent of the lesser of the closure or breakdown fracture pressure in any other pools proposed for commingling (with pressure adjusted for gas and liquid gradients in the wellbore if necessary), a licensee may not commingle gas in the wellbore without the specific approval of the EUB through an application filed in accordance with Section 3.1.8 of *Directive 065*. Any application requesting approval for commingling in this situation must show that the pools involved will be isolated during any shut-in periods and that casing and cement integrity and wellhead design are adequate for the proposed completion.

*8. Are there any unresolved equity issues with respect to the intervals proposed for commingling?*

**a) Notice**

**Notice of Commingling Using the DE or SD Process Before Completing the Well in an Unsegregated Manner**

If the lessors are not common for the different strata within the wellbore where

commingling is proposed, the licensee must notify the Freehold mineral lessors of the proposed commingling a minimum of 15 working days prior to when it is anticipated the well would be completed for commingled production. This notice must be provided regardless of whether the lessee ownership is common or pooled within the spacing unit. The notice should provide that any concerns regarding the proposed completion are to be filed with the licensee. The licensee must make efforts to address the concerns raised to the satisfaction of the lessor(s) prior to completing the well. If the licensee is unable to resolve the matters raised by the lessor(s), the production from the well may not be commingled using the DE or SD process. If commingling of production is desired in this situation, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted. Any licensee making such an application will be required to address issues raised by the Freehold mineral lessor(s).

If the above-noted lessor ownership situation does not exist, a licensee is not required to provide advance notice to any party that it is proposing to commingle production in the wellbore.

**Notice of Commingling Using the DE or SD Process After Completing the Well**

A licensee that has commingled production using the DE or SD process must provide notice of the commingling, at the minimum, to the licensees of all wells, other than abandoned wells, and to all Freehold mineral lessors in the section to be commingled and the eight DSUs immediately offsetting the well in which commingling has occurred. In addition, the licensee must make a judgement as to whether parties outside specified areas could be potentially directly and adversely affected and, if so, provide notification to those parties also.

Notice is to be provided within 30 days from the onset of commingling.

**Disputes Regarding Commingling Under the DE or SD Process**

If any dispute arises with an offsetting licensee as to whether the commingling should have occurred, the parties should attempt to resolve the issue through negotiation, appropriate dispute resolution, and other mutually acceptable means. If the dispute is not resolved, either party may contact the EUB for resolution. After review of the matter, the EUB may require that production in the well under dispute be segregated.

Although it would normally be expected that any concerns raised in response to notice of commingling would be brought forward by Freehold mineral lessors or licensees with an interest within the area of notice, concerns raised by parties outside of that area must also be addressed. If the EUB were asked to make a decision in such a case, it would consider the arguments brought forward on their own merits and would not automatically reject the concerns raised solely because the objecting party's interests are located outside of the notice area.

**b) Varying Interests**

Potential DE or SD well candidates that have varying ownership or royalty interests in the DSU must not commence commingled production unless all parties involved in the DSU have agreed. Licensees should be aware that well spacing may not be the same for all zones.

**c) Off-target Wells**

Commingling of production in the wellbore may also be an issue if a well is off target, because commingling will affect the licensee's ability to obtain segregated pool data, which in turn may adversely affect the ability of offsetting licensees to determine the possible effects of the off-target well. For example, the offsetting licensee may not be able to adequately judge whether the off-target well is in the same pool as the offsetting licensee's well because of a lack of segregated pool data.

If a licensee is considering drilling an off-target well and is also considering commingling production in the wellbore from the onset, it is recommended that the licensee determine in advance whether such commingling is likely to be an issue with any offsetting mineral holder with a wellbore, so that the question on equity on the decision trees can be adequately answered.

If there is commingling in an off-target well and subsequently a dispute arises respecting the off-target well, the EUB may require the licensee to segregate production from the pools in question so that data can be obtained to resolve the dispute.

Sample notice letters for commingling using the DE are SD processes are included in Appendix B.

*9. Is the well in a designated oil sands area or in a pool that overlaps a designated oil sands area?*

The licensee must check EUB Orders No. OSA 1, OSA 2, and OSA 3 showing designated oil sands areas and strata. These orders are available on the EUB Web site www.eub.ca and from EUB Information Services. Because the issue of gas production in oil sands areas can be complex and the optimum processes for dealing with the production of gas reservoirs in contact with bitumen reserves have not been determined, wells in this area are not candidates for SD commingling. If approval to commingle gas production in a designated oil sands area or from any pool that overlaps a designated oil sands area is desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*10. Is any of the production proposed for commingling from coals or shales outside a DE?*

Production from coals and shales is not well understood; therefore SD commingling may not occur in wells located outside a DE. If approval to commingle production in this situation is desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted and validated control wells are required, as outlined in the Control Well Requirements on the EUB Web site www.eub.ca.

*11. Are any of the pools or intervals proposed for commingling subject to any existing or proposed enhanced recovery scheme?*

Conservation may be jeopardized if any pool proposed for commingling is part of an enhanced recovery scheme. The lack of segregation could result in operational difficulties and the loss of data required to properly manage the scheme. In this situation, SD commingling may not occur. If approval to commingle production is desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*12. Does the proposed commingling mix oil and nonassociated gas?*

Conservation of oil may be jeopardized if there is commingling of oil and nonassociated gas. The lack of segregation could make it difficult to determine if the oil pool is a candidate for enhanced recovery. In this situation, SD commingling may not occur. If approval to commingle is desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*13. Do the oil pools proposed for commingling have the same rate administration?*

Oil pools proposed for commingling must have a common rate administration. This means that all pools have been approved for good production practice (GPP) or, alternatively, that all wells in the pools are subject to a maximum rate limitation (MRL). The MRLs can be different for the wells.

If commingling is desired for pools with different rate administration, the well licensee's first step must be to file an application requesting the same rate administration for all pools involved (i.e., all pools are either approved for GPP or all pools are subject to MRL). If the EUB approves the application to establish the same rate administration, the well licensee may then review the well(s) and pools involved to determine if commingling may occur under the SD process. If the well(s) and pools still do not meet all the SD criteria and approval to commingle in this situation is still desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*14. Do any of the oil pools proposed for commingling have associated gas caps that have not been approved for concurrent production?*

If commingling is desired for any pool with a gas cap that has not been previously approved by the EUB for concurrent production, the well licensee's first step must be to file an application requesting approval of the appropriate concurrent production. If the EUB approves the application for concurrent production, the well licensee may then review the well(s) and pools involved to determine if commingling may occur under the SD process. If the well(s) and pools still do not meet all the SD criteria and approval to commingle in this situation is still desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

*15. Do any of the [oil] pools proposed for commingling (any combination of new completions and existing producing completions) have wells capable of producing a commingled flow rate greater than 3 $m^3/d$?*

Pools that have wells capable of producing a commingled flow greater than 3 $m^3/d$ are considered to be potential enhanced recovery candidates.

For each existing segregated producing oil pool, the rate must be determined while the well is producing in a pumped-off fashion. The rate must be an average of the last three months of production, calculated using operating hours; the three months need not be consecutive, nor is there a minimum time for production in a given month.

For a new oil pool/well, the anticipated production rate must be determined from test data collected from the oil zones in the well.

If approval to commingle in this situation is desired, an application in accordance with Section 3.1.8 of *Directive 065* must be submitted.

### 3.1.8 Approval to Commingle Production Through an Application

If the proposed commingling does not meet the criteria to allow commingling through the DE or SD processes and is not already approved for the pools in question, the licensee must obtain approval for commingling through the application process. The licensee must file an application in accordance with Sections 3.050 and 15.220 of the *OGCR* and Section 3.1.8 of *Directive 065*. The applications may request commingling on a well, pool, or area basis.

For wells, pools, or areas applied for under this process, the intervals applied for commingling must remain segregated until the EUB has issued an order approving the application.

In summary, the application process may be used to obtain approval to commingle production in accordance with Section 3.050 of the *OGCR* if the proposed commingling is not permitted through the DE or SD process. In addition, applications may be made for area-based commingling; however, area-based applications should only be submitted for areas and strata that do not qualify for the DE or SD process.

#### 3.1.8.1 How to Make a Commingling Application

The EUB prefers that applications with the required information be filed electronically, rather than on paper, using the Electronic Application Submission (EAS) process, accessed through the Digital Data Submission (DDS) screen on the EUB Web site www.eub.ca. Any application submitted in a paper format must include Schedule 1 and the required information. The EUB will review all applications to ensure that the requirements for commingling applications have been met. Incomplete applications or those containing significant errors will be closed.

#### 3.1.8.2 How the EUB Processes the Application

The EUB reviews all commingling applications to ensure that oil and/or gas recovery will be optimized, there will not be any adverse affects from the commingling, safety is maintained, and non-saline groundwater is protected.

The EUB will disposition applications electronically, with the disposition being available for viewing through IAR Query for 30 days after the disposition of the application. IAR Query is accessible via the Applications page on the EUB Web site.

#### 3.1.8.3 Requirements for an Application for Commingled Production on a Well, Pool, or Area Basis

The requirements for all situations where commingling may be desired are numbered and described later in this section. The information required for any specific commingling application will depend on the reasons that the application is being made. Table 3.2 shows the numbered requirements that must be met in each of the situations noted. Depending on the situation, the applicant may be required to choose more than one of the categories and meet the combined requirements in the application.

If the proposed commingling includes gas from coal or shale, an applicant must file an application for approval of commingling on an area basis, rather than for a well or pool-based approval. An area-based approval can include one or more DSUs. Applications

should be formatted so that the number of the requirement in Table 3.2 corresponds with the numbered discussion in the application.

**Table 3.2 Summary of Requirements for Commingling on a Well, Pool, or Area Basis**

| Reason for Filing a Commingling Application | Requirements for Application |
|---|---|
| 1. There is actual or anticipated water production equal to or greater than 5 $m^3$/month in a well with perforations above the BGWP. | 1, 2(a), 2(b)(i), 3-6, 9, 12-16 |
| 2. There is a water well within a 600 m radius with a total depth less than 25 m from the top of the perforations of the well proposed for commingling. | 1, 2(a), 2(b)(i), 2b(ii), 3, 4, 7-9, 12-16 |
| 3. There is $H_2S$ in the proposed commingled production stream. | 1, 2(a), 2(b)(iii), 3, 4, 9-16 |
| 4. The proposed commingling is for<br>• nonassociated and associated gas,<br>• oil and nonassociated gas,<br>• oil, associated gas, and nonassociated gas, or<br>• oil pools (any combination of new completions and existing producing completions) having wells capable of producing a commingled flow rate more than 3 $m^3$/d. | 1, 2(a), 2(b)(iv), 3, 4, 12-16, 19 |
| 5. The reservoir pressure of a pool or interval proposed for commingling exceeds 90 per cent of the lesser of the closure or breakdown fracture pressure of one of the other pools or intervals proposed for commingling. | 1, 2(a), 2(b)(v), 3, 4, 12-15, 17 |
| 6. There are unresolved equity issues with respect to the proposed commingling. | 1, 2(a), 2(b)(vii), 3 |
| 7. The well is in a designated oil sands area or is in a pool overlapping a designated oil sands area. | 1, 2(a), 3, 4, 12-16, 20 |
| 8. A pool proposed for commingling is subject to an existing or proposed enhanced recovery scheme. | 1, 2(a), 2(b)(vi), 3, 4, 12-16, 18 |
| 9. Area-based commingling is desired, including for gas production from coals and shales outside a DE. | 1, 2(a), 2(b)(vii), 3, 4, 9, 12-16, 21 |
| 10. Commingling of production would involve an operational issue not specifically detailed in *Directive 065*. | All requirements are to be cited in the application. For any requirement not applicable to the situation, the applicant must indicate that the requirement does not apply. |

An application for approval to commingle production must include the information for those items as specified in the table above and as described below.

| Requirements | Comments |
|---|---|
| 1) A statement of what is being requested, including<br>a) a reference that the application is being made under Section 3.050 of the *OGCR*, and<br>b) if approval for commingling is requested on a well or pool basis, the name of the well(s) and pools that are the subject of the application, together with identification of each productive interval (kelly bushing [KB] elevation, in metres) in each well of interest from which you propose to commingle production, or<br>c) if an area-based commingling approval is being requested, a list of the sections in the area of application and the zones to which the commingling would apply, together with a geophysical log of a type well with annotations identifying the subject zones. | If the pools involved have not been defined by the EUB at the time of application, the pools should be referred to as undefined.<br><br>Inclusion of the intervals ensures that there is no confusion about the pools involved, which might occur if the EUB and an applicant have different terminology for the same zones. |
| 2) A discussion of the reasons why you are requesting commingling, including, as appropriate,<br>a) a statement of the DE or SD criteria that were not met or the operational issues that would be addressed by commingling, and<br>b) justification as to why commingling should be granted, including, where required,<br>(i) why commingling will not contaminate any non-saline water interval, with supporting technical evaluation as appropriate,<br>(ii) why commingling will not cause any issues in the water well(s), with supporting technical evaluation, including<br>• the geological setting of the shallowest perforated zone and water-bearing zone(s),<br>• the details of the fracture stimulation proposed or done, | In general, improved economics with commingling alone or the ability to conduct fewer tests under a commingling approval are not considered valid reasons for an application.<br><br>Your discussion of why commingling should be permitted should draw on the information and evaluations included elsewhere in the application. |

| Requirements | Comments |
| --- | --- |
| and<br>• an evaluation of the potential of fracture propagation from the hydrocarbon zone into the water zone,<br>(iii) why commingling of the sour gas will not cause problems, including contamination of sweet pool, with supporting technical evaluation,<br>(iv) why commingling will not adversely impact recovery from the oil pool, with supporting technical evaluation,<br>(v) why the differences in pressure between the pools will not be a safety issue if commingling is permitted, with supporting technical evaluation; provide an explanation of why the higher pressured zone/s cannot be produced first so that the pressure depletion will allow the addition of lower pressured zones at a later date,<br>(vi) why the commingling will not adversely impact the operation of the enhanced recovery scheme, with supporting technical evaluation, or<br>(vii) why the commingling will not have any adverse impacts, with supporting technical evaluation. | |
| 3) A description of your notice program, including<br>a) lists of the parties notified, | The parties that must be notified are set out in the Table 3.1 in Section 3.1.3.5.<br><br>You must provide a tabulation of Freehold owners and well licensees notified. The tabulation should include the legal land description by DSU for the area of notification and the names of the mineral owner(s), except as noted below, and well licensees contacted for each DSU.<br><br>The tabulation must not include the names of individual Freehold mineral owners, as this might raise privacy issues. For these persons, the tabulation should specify "Freehold – Individual."<br><br>You must compile a list of the names, legal |

| Requirements | Comments |
| --- | --- |
| | description of the land involved, and mailing addresses of all Freehold mineral owners notified and have this information available to the EUB on request. As this list contains personal information, it is **not** to be filed upon submitting the application to the EUB. |
| b) evidence of notification, and | Provide a written statement that all of the Freehold mineral owners and well licensees as required by Table 3.1 have been notified.<br><br>Provide an example of the notification letter sent to individual Freehold mineral owners and to well licensees. Do not include any individual's name or contact information in the example of the letter sent to Freehold mineral owners.<br><br>Do **not** provide copies of any notification letters that were sent unless specifically requested by the EUB. |
| c) summary of notification results. | Provide a statement of the results of your notification program.<br><br>The EUB does not require letters of consent from the parties notified. Do **not** file copies of any consent letters that may have been received unless requested to do so by the EUB.<br><br>You must include the details of unresolved concerns, both written and verbal, in the application filed with the EUB. Include a discussion of how you have addressed the unresolved concerns and the outcome you expect from the EUB regarding the unresolved concerns. If an unresolved objection is from an individual Freehold mineral owner, do not include the person's name, contact information, or written correspondence. In these cases the objector must be identified as "Freehold – Individual" in the application. You must have the name, contact information, and written correspondence from such individuals available to the EUB on request.<br><br>If a substantiated, valid objection is filed that cannot be resolved by the parties involved in a reasonable time, the EUB will typically schedule a public hearing to consider the |

| Requirements | Comments |
|---|---|
| | application. |
| 4) If there are perforations above 600 m KB, identification of the base of groundwater protection (BGWP) (m KB). | The BGWP may be obtained from the data provided in EUB *ST55-2007: Alberta's Base of Groundwater Protection (BGWP) Information* or from your own analysis. If you have completed your own analysis, you must include the geological and/or technical information to support your pick of the BGWP in the application. |
| 5) a) Identification of the source (intervals), composition, and volumes of the water, and<br>b) a discussion of how anticipated water production was estimated or how produced water was measured or estimated. | You must conduct sampling and analysis of the water in accordance with *Directive 044*.<br><br>Well licensees are responsible for ensuring that the volume of water produced from a well is measured accurately. |
| 6) If the applicant is proposing to produce non-saline water, the number of the water diversion permit that has been obtained from Alberta Environment. | The *Water Act* prohibits the production on non-saline water unless such production is approved by a water diversion permit obtained from Alberta Environment. |
| 7) A figure showing the water-bearing interval(s) in relation to all perforations within 25 m of the water-bearing interval or the shallowest productive perforated interval. | You must evaluate whether there are water wells within the 600 m radius and 25 m depth for all wells in the pools proposed for commingling, even if the application itself is for a single well, as the EUB will consider approving commingling on a pool rather than well basis only in exceptional circumstances as required by Section 3.050 of the *OGCR*. |
| 8) A copy of the results of a water well test analysis if conducted; if not conducted, an explanation of why a test was not conducted. | If you offered to test the water well but the owner of the water well rejected the offer, a statement should be made in the application to this effect. |
| 9) A copy of the fluid analysis for each pool and coal and shale zone proposed for commingling. | |
| 10) Confirmation that the infrastructure to produce and transport the reservoir fluid is appropriate for the commingled production stream. | |

| Requirements | Comments |
|---|---|
| 11) Confirmation that an EUB-approved emergency response plan (ERP) incorporating the proposed commingling is in place or, alternatively, a discussion addressing the status of the ERP. | If the proposed commingling will result in an increase in the potential $H_2S$ release volume, the EUB must ensure that there is an up-to-date ERP in place prior to its decision on the application.<br><br>If no up-to-date EUB-approved ERP is in place but is required, the applicant must confirm that an application for the updated ERP has been filed directly with the EUB Operations Group for review. See *Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry* for further details on emergency response planning.<br><br>If you consider that an updated ERP is not required, your discussion must indicate why you believe that is the case. |
| 12) A discussion of the geology of the pools involved in the application. | Knowledge of the geological setting for a pool can add insight as to the quality of the pool (for example, a reservoir matrix that would result in poor permeability and/or poor productivity) and the likelihood that the pool may be extensive (e.g., the depositional environment, the trapping mechanism). |
| 13) For all types of reservoirs excluding coal or shale reservoirs, your interpretation of each pool involved in the application, including<br>a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool,<br>b) if pool delineation or fluid interfaces are based on structural interpretation, a structure contour map of the pool and offsetting area, and | You do not have to include net pay isopach maps if the pools are considered to be single well; however, you should explain why the pools are considered to be single-well pools and whether this is based on offset well control and/or engineering data.<br><br>If the size of the pool is unknown due to poor well control, the EUB may consider it premature to approve commingling, unless there are compelling reasons to do so.<br><br>If pools are larger, not in a stage of advanced depletion, and/or have good deliverability, the EUB may consider that segregated production should be maintained to allow for the collection of segregated pool data for the purpose of enhancing pool management to obtain optimum recovery of reserves.<br><br>You should only include a structural map if it is a key in determining fluid interfaces or pool delineation. |

| Requirements | Comments |
|---|---|
| c) a tabulation of the interpreted net pay, porosity, and water saturation for each well in the pool, and cutoffs applied. | If you do not supply tabulated well data for all wells in the pools, you must explain why. |
| 14) For all types of reservoirs including coal and shale reservoirs, an interpreted and annotated log cross-section or representative well log(s) showing<br>a) stratigraphic interpretation of the zone(s) of interest,<br>b) interpretation of the fluid interfaces present,<br>c) completions and treatments to the wellbore(s), with dates,<br>d) cumulative production,<br>e) finished drilling date and KB elevation, and<br>f) the scale of the log readings. | For cases involving gas pools, an annotated representative well log is sufficient. If oil pools are involved and the potential for enhanced oil recovery must be addressed, you should include the annotated cross-section. |
| 15) A tabulation of<br>a) the results of deliverability, flow, or production tests on **each** pool proposed for commingling in the wells of interest, together with an indication of the type of test involved (e.g., AOFP) and the date of the test, and<br>b) if a well is currently producing, a tabulation summarizing the current productivity of each pool in the subject well. | The EUB is not prepared to consider requests to approve commingling of production from pools unless those pools are considered to be capable of production. This would at minimum entail flow test data showing that the individual pool is capable of production. (Copies of the actual tests are not required for the application unless specifically requested.)<br><br>If a well is producing, only a summary of current productivity for each pool in the well involved is required. You should not include the entire production history of the well in the application, unless the production trend is the basis for the request.<br><br>If the productivity of a pool has declined significantly or is low from the outset, the case for commingled production is strengthened in that it can be argued that commingling would allow each pool involved to produce economically for a longer time and thus enhance overall recovery. |
| 16) Initial and current sandface pressure information in accordance with *Directive 040* for **each** pool, together with an indication of the type and date of the test or the analysis used to estimate the pressures, and if there are pressure | The EUB is not prepared to consider requests to approve commingling of production from pools unless there is pressure information for each pool. |

| Requirements | Comments |
|---|---|
| differences between pools, evaluations of<br><br>a) the potential for cross-flow of reservoir fluids between the pools, particularly when the well is shut in, and<br>b) why the pressure differences will not result in any adverse impacts if commingling is permitted. | Pressure differences between pools raises the possibility that commingling of production may result in the cross-flow of reservoir fluids between pools. The cross-flow may contaminate a non-saline water zone or result in an adverse impact on the recovery of hydrocarbons from one or both pools involved. For example, recovery may be adversely impacted by cross-flow of fluids by gas entrapment behind perforations, by precipitate formation resulting from incompatible reservoir fluids, or by the movement of fine particles. In addition, a water-sensitive formation may be damaged by the cross-flow of water. |
| 17) If the application has been filed because the reservoir pressure of a pool or interval proposed for commingling exceeds 90 per cent of the lesser of the closure or breakdown fracture pressure of one of the other pools proposed for commingling,<br>a) calculations to demonstrate that the reservoir pressure of a pool or interval proposed for commingling exceeds either<br>• 90 per cent of the fracture closure pressure of a shallower zone that has been fracture stimulated, or<br>• 90 per cent of the fracture breakdown pressure of a shallower zone that has not been fracture stimulated,<br>b) confirmation that the shallow pool will be segregated during periods that the well is shut in, including a wellbore schematic showing the actual or proposed completion to ensure segregation, and<br>c) pressure decline analysis to demonstrate the length of production time needed for the pressure of the higher-pressured pool to decline so that segregation is not required during periods the well is shut in. | Closure pressure is the pressure needed to open and/or extend a fracture resulting from previous stimulation operations. Breakdown pressure is the pressure needed to initially fracture a reservoir during stimulation operations.<br><br>Having extreme pressure differences between pools proposed for commingling raises a safety issue in that wellbore control may be jeopardized if fluid from a high-pressured reservoir flows into a lower-pressured reservoir that has a well completion or wellhead equipment not designed for such high pressures. Another concern about the commingling of production from pools with extreme pressure differences arises when a new well is drilled into a pool that has an unusually high pressure due to cross-flow from a commingled completion; this raises a safety issue in that the party drilling nearby may not anticipate the higher pressure. |
| 18) Identification of the existing or proposed enhanced recovery scheme. | This must include the approval number of any existing scheme or the application number or details of a proposed scheme. |
| 19) For any oil pools involved,<br>a) confirmation that the oil pools have a | Production from oil pools with different rate |

| Requirements | Comments |
|---|---|
| common rate control or, alternatively, a separate application requesting a change in rate control has been submitted to the EUB, | controls may not be commingled. |
| b) if there is associated gas, confirmation that approval of concurrent production has been obtained or that a separate application requesting concurrent production approval has been submitted to the EUB, | Separate applications must be submitted for commingling approval and for concurrent production and good production practice. |
| c) a discussion respecting whether the oil pool involved contains or has potential for an enhanced oil recovery scheme and, if so, the possible effect of approval for commingling of production on the effectiveness of such a scheme, and | Commingling of production in the wellbore might not be an optimum strategy when it may hamper the effectiveness of an enhanced recovery scheme. |
| d) an evaluation of the oil and gas reserves for each pool, including | |
| i) an estimate of the initial oil volume and gas volume in place, | |
| ii) an estimate of the oil and gas recovery factors, | |
| iii) a description of the methods used in determining (a) and (b) above (e.g., material balance, volumetric analysis, model study, a comparison of analog pools), and | |
| iv) the supporting data used in determining (a) and (b) above and the sources of the data (e.g., pressure/volume/temperature [PVT] properties and source, pressure data and source). | |
| 20) For any gas pool located in an oil sands area, | For wells drilled and/or completed in a defined oil sands strata after July 1, 1998, you must submit an application and obtain approval from the EUB before any gas, other than solution gas, may be produced. |
| a) confirmation that there is no shut-in order for the subject well and zones arising from a gas/bitumen proceeding and that the wells and zones are not subject to any upcoming gas/bitumen proceeding, | In an area where pool performance and pressure data are scarce (e.g., low drilling density, limited production), the ongoing collection of zonal data may prove crucial to future decisions on gas production and to the re-evaluation of past gas production approvals. Unless the EUB is satisfied that the region of influence of the gas zones in the area is well defined, commingling may be denied. |
| b) a statement that the well involved would be producing in accordance with EUB *Interim Directive (ID) 99-1*, and | |
| c) a discussion indicating that the loss of individual pool data resulting from the commingling will not adversely affect | |

| Requirements | Comments |
|---|---|
| future evaluation of the impact of gas production on the bitumen resource in the area. | |
| 21) If an area-based approval is being requested, | |
| a) evidence that the application applies to specific zones in all portions of the contiguous area for which the rationale for commingling of production from the identified zones exists (not just to the applicant's working interest lands), | |
| b) a discussion demonstrating that conservation goals are at least as likely to be achieved through commingling of production as through segregated operations, | The discussion should show that the loss of individual pool data resulting from the commingling will not adversely affect the ability of the operator to adequately mange pool operations in future. |
| c) a tabulation of all relevant data for the zone and area of interest (not just the applicant's working interest lands), including<br>i) deliverability and flow test information, together with the type and date of the test,<br>ii) initial and current zone/pool pressures, together with an indication of the type and date of the test, and<br>iii) a summary of the current daily production rate (as calculated on operating time) for the wells and pools in the area under evaluation,<br>together with a discussion showing that there are sufficient existing data to demonstrate a pattern of production performance in the area for which the application is being made, and | The density of well information required to successfully make a case that there are sufficient existing data to demonstrate a pattern of production performance in the area involved will vary according to the complexity of the geology in the area. |
| d) for the commingling of gas from coals and/or shales outside a DE, confirmation that a submission requesting the EUB to validate the required pressure/flow and desorption control wells for the coal or shale production has been filed or, alternatively, if all necessary control wells have already been validated, a list of the locations of the validated control wells. | |

## 3.2 Background to Good Production Practice, Gas-Oil Ratio Penalty Relief, and Special Maximum Rate Limitation

Most new oil pools in Alberta initially have rate controls applied. These restrictions are designed to ensure that oil pools in the province are not significantly depleted before the pool's optimum depletion strategy can be determined. This helps to ensure that enhanced oil recovery (EOR) feasibility is addressed early in the pool's life, along with solution-gas conservation, concurrent production, and any equity problems among operators in the pool. The tool used by the EUB to impose rate controls is the Maximum Rate Limitation (MRL) Order.

Generally, the EUB will not approve accelerated production rates to improve the economics for initiating enhanced recovery or data gathering to determine and assist in optimization studies. The EUB also notes that the applicant should refer to *Directive 007-1: Allowables Handbook* for details on the administration of allowables and *Interim Directive (ID) 99-2: Revised Policy on Administration of Oil MRL's and Overproduction* regarding retirement of overproduction rules.

Applications to remove oil rate controls fall into three categories:

- a request that the oil pool be removed from the MRL system (good production practice [GPP])
- a request that an amendment to the MRL Order modify or remove gas-oil ratio (GOR) penalties
- a request that an amendment to the MRL Order increase the MRL above its reserves-based value (Special MRL)

Before approving any of the above applications, the EUB must be satisfied that

- the pool is operating under its optimum depletion strategy to ensure that economic oil recovery is maximized,
- gas conservation has been addressed using the decision tree and economic decision process set out in EUB *Directive 060,* and
- equity issues have been resolved.

Because the issues are the same in each application, the EUB often approves GPP when GOR penalty relief and/or Special MRL have been applied for. The following section outlines the content requirements for these three applications, starting with GPP. GOR penalty relief and Special MRL are treated as alternatives to GPP when unique circumstances exist that would preclude granting GPP.

## 3.3 Application for Good Production Practice—Primary Depletion Pools

This section deals only with GPP applications for pools under primary depletion. GPP removes a pool from restrictions imposed by the EUB's monthly MRL Order and is granted under Section 10.060 of the *Oil and Gas Conservation Regulations*. Under GPP, the wells in a pool are not restricted by base allowable or GOR penalties. However, as the name implies, operators are expected to produce the wells in accordance with good engineering practices to optimize oil recovery. The EUB may rescind GPP approval if new information or technology indicates that production under GPP may affect conservation or the rights of other owners in the pool. GPP may be granted with concurrent production restrictions on gas cap production or other conditions.

Note that for pools under primary depletion, GPP is granted to the pool, not to individual wells. For pools where EOR schemes exist, GPP is usually granted only to the ER oil scheme areas.

### 3.3.1 Requirements for an Application for GPP (file 3 copies)

| Requirements | Comments |
|---|---|
| 1) Your geological interpretation of the pool, including | |
| a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool, | For primary pools, GPP is granted to the entire oil pool. Therefore, the application must provide a geological interpretation of the entire pool, not just lands you own. |
| b) where pool delineation or fluid interface locations are based on structural interpretation, a structure contour map of the pool and offsetting area, | If it will help to clarify your basis for pool delineation or other aspects of your geological interpretation, you should submit a log cross-section containing wells both within and outside of the pool. As a minimum, you must submit at least one representative well log from a well in the pool showing the information required in item 1(c). |
| c) an interpreted and annotated log cross-section or representative well log(s) showing the | |
| i) stratigraphic interpretation of the zone(s) of interest, | |
| ii) interpretation of the fluid interfaces present, | You must provide a clear picture of your geological interpretation, including the potential for further pool development. |
| iii) completions and treatments to the wellbore(s), with dates, | |
| iv) cumulative production, | |
| v) finished drilling date and kelly bushing (KB) elevation, and | |
| vi) scale of the log readings, and | |

| Requirements | Comments |
|---|---|
| d) a tabulation of your interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | |
| 2) Your evaluation of the oil and gas reserves for the pool, including<br><br>a) an estimate of the initial oil volume and gas volume in place,<br><br>b) an estimate of the oil and gas recovery factors,<br><br>c) a description of the methods used in determining (a) and (b) above (e.g., material balance, volumetric analysis, model study, and a comparison of analog pools), and<br><br>d) the supporting data used in determining (a) and (b) above and the sources of the data (e.g., pressure/volume/temperature [PVT] properties and source, pressure data and source). | The size of oil and gas cap reserves affects depletion strategy, EOR feasibility, and gas conservation economics.<br><br>The stage of depletion of the pool may influence the EUB's decision and should be discussed where appropriate.<br><br>If there are sufficient pressure, production, and PVT data, you should do a material balance evaluation and compare it to the volumetric results.<br><br>Failure to provide information on the calculation methods and supporting data will delay processing of your application.<br><br>It is not necessary to provide production plots for the wells, except to illustrate a particular point or issue (e.g., decline analysis, specific well performance issues). |
| 3) A discussion and analysis of why waterflooding or some other form of enhanced oil recovery (EOR) is not feasible for this pool. This should include<br><br>a) your screening criteria and supporting calculations and data,<br><br>b) if EOR was found to be technically feasible but uneconomic, your economic evaluation and supporting data, and<br><br>c) if numerical simulation was used, a description of the model, the input data, results of history matching, cutoffs used for each case, descriptions of the cases run, and summaries and analyses of the results. | EOR evaluation is a critical part of any GPP application, and processing delays will result if it is not done properly. If the EUB agrees that the pool is a single-well oil pool with no potential for expansion or further drilling or is in good<br>communication with a fully active aquifer system, EOR will not be an issue.<br><br>If EOR is considered feasible, GPP will be denied pending implementation of EOR. |

| Requirements | Comments |
|---|---|
| 4) Analysis, discussion, and supporting data to show that producing the pool under GPP is the optimum depletion strategy for the pool. If there is gas-cap gas production, you need to supplement this with the information required for a CCP application and identify further conditions needed to approve CCP (e.g., gas rate limit, maximum GOR). | This should build on the analyses in items 3 and 4 above. Having eliminated EOR, you must satisfy the EUB that producing wells at unrestricted rates will not reduce primary recovery.<br><br>If the MRL and GOR penalties do not restrict production in the pool now or in the future, you should include this in your discussion.<br><br>At this point you may wish to request a reduced pressure test frequency in the pool if you can show that a lesser frequency is appropriate.<br><br>Failure to adequately address CCP will delay processing. Please refer to the CCP application requirement in Unit 2, Section 2.4. |
| 5) A discussion of the status of gas conservation from wells in the pool, including wells owned or operated by others. This discussion should<br><br>a) confirm that full gas conservation from all wells is occurring and will continue, or<br><br>b) outline the schedule for implementation of full gas conservation, or<br><br>c) justify why you are not proposing full gas conservation under GPP. | Your evaluation of gas conservation should use the decision tree and economic decision process set out in EUB *Directive 060*, Sections 2.3 and 2.4.<br><br>Under full gas conservation, only nonroutine flaring can occur. *Directive 060*, Section 2.6, defines nonroutine flaring at conserving facilities and specifies operational requirements to minimize this flaring.<br><br>Failure to address gas conservation in accordance with *Directive 060* will result in processing delays and deficiency requests. |
| 6) Individual legible maps showing<br><br>a) the lessees in and adjoining the applied-for pool, and<br><br>b) the lessors in and adjoining the applied-for pool. | To ensure clarity, you should construct your own map, rather than submit a photocopy from part of a commercial land map you purchased. Confusion about ownership in the area will delay processing. |
| 7) If there is mixed ownership in the pool,<br><br>a) state that you are applying on behalf of all well licensees in the pool, or | You are encouraged to apply on behalf of all well licensees in the pool. If not, the EUB's application process must ensure that parties having a bona fide interest in the application are provided an opportunity to intervene. For |

| Requirements | Comments |
| --- | --- |
| | more information, refer to the *Energy Resources Conservation Act* and the corresponding *Alberta Energy and Utilities Board Rules of Practice.* |
| b) identify the well licensees not represented, explain why they are not represented, and evaluate the impact that GPP approval will have on the rights of these owners. | Your evaluation of the impact on parties not represented should include supporting data; otherwise processing will be delayed. |

## 3.4 Application for Gas-Oil Ratio Penalty Relief

GOR penalties are applied to an oil well's MRL when the producing GOR exceeds the base GOR. The penalty factor is calculated by taking the ratio of the base GOR to the producing GOR. The MRL is then multiplied by this penalty factor to determine the adjusted MRL (the permitted production rate). GOR penalty relief is applied for under Section 10.060 of the *Oil and Gas Conservation Regulations*.

GOR penalty relief applications face the same issues as GPP. For this reason, when processing a GOR penalty relief application, the EUB will often grant GPP, with full gas conservation as a condition. GOR penalty relief is approved through the application of a net GOR penalty factor, which reduces the GOR penalty by subtracting out any fuel gas or gas delivered to an approved gas gathering system.

GOR penalty relief is not automatic when gas is conserved. When GORs rise significantly above the solution GOR of the oil, this indicates that pressure depletion and/or gas cap coning is occurring, neither of which is desirable for optimum oil recovery. These issues must be addressed before an application can be approved, despite ongoing gas conservation.

### 3.4.1 Using the O-33 Form

To apply for GOR penalty relief, operators often use the O-33 form, which was introduced in 1989 as part of *Informational Letter (IL) 89-14*. The O-33 form is specifically targeted at small (one or two wells), low-quality pools (rates below minimum allowable initial high-water cuts). *Directive 065* supersedes the requirements set out in *IL 89-14*, but the EUB will continue to accept the O-33 form for small, low-quality oil pools if the conservation and equity issues are not complex. See Appendix C for a copy of the O-33 form. If using this form, submit three copies to the EUB.

### 3.4.2 Requirements for an Application for GOR Penalty Relief

For GOR penalty relief application requirements, please use the GPP application requirements and comments (Section 3.3.1). Note that CCP must also be applied for (see Section 2.4) if the high GORs are a result of production from a gas cap. You should also state in your application why you are applying for GOR penalty relief rather than GPP.

## 3.5 Application for Special Maximum Rate Limitation (MRL)

A Special MRL is an MRL approved by the EUB that is greater than the reserves-based MRL. Special MRLs can be applied to entire pools or individual wells. Relatively few Special MRL applications are received or approved each year because, like GOR penalty relief, Special MRL applications have the same issues involved as GPP. For this reason, when processing a Special MRL application, the EUB will often grant GPP. A Special MRL is applied for under Section 10.060 of the *Oil and Gas Conservation Regulations*.

### 3.5.1 Requirements for an Application for a Special MRL

For Special MRL application requirements, please use the GPP application requirements and comments (Section 3.3.1). You should also state in your application why you are applying for Special MRL rather than GPP.

## 3.6 Application to Amend or Rescind a Gas Allowable Order

### 3.6.1 Background

There are essentially three situations when the EUB may issue a gas allowable (GA) order for the purpose of setting the maximum allowed gas production rate for a gas well or wells in a pool:

- if the ultimate recovery of gas may be adversely affected by unrestricted production rates (Section 10.300(1) of the *Oil and Gas Conservation Regulations* [*OGCR*]),
- if a gas well is completed outside of its prescribed target area and it is necessary to apply an off-target penalty to the well's base allowable for equity reasons (Section 4.070(1) of the *OGCR*, EUB *Interim Directives (ID) 94-2* and *94-5*), and
- if the Board has approved a fractional section as a drilling spacing unit and there is a need to apply an area-ratio production penalty or off-target penalty for equity reasons (Section 4.050(1) and (2) of the *OGCR*).

Section 10.095 of the *OGCR* designates that the base allowable for a gas well shall be its maximum daily allowable ($Q_{max}$). The calculation of $Q_{max}$ is explained in Section 10.300(1)(c) of the *OGCR* and in EUB *Informational Letter (IL) 85-10*. In all instances above, the penalties are applied against the well's $Q_{max}$ and an annual allowable (based on this $Q_{max}$ and the number of days in the year) is assigned.

### 3.6.2 When to Make This Application

When a well is subject to an EUB gas allowable (GA) order and the well's licensee believes that circumstances warrant the allowable being rescinded or amended, an application can be made to change the allowable in accordance with Section 10.300(4) of the *OGCR*. There are a number of reasons for a change to a gas well's allowable, including

- equity (e.g., there is no longer an offsetting productive well),
- conservation (e.g., there is no longer a reason to restrict the rate for conservation reasons),
- pool delineation (e.g., data support a new pool interpretation that does not warrant the application of a gas allowable to the well), or
- administrative (e.g., the well can no longer meet the allowable).

The original reason for the initial assignment of the allowable will dictate the basis for any requested change, and the application must address what has changed since the original allowable was assigned to the well to justify the application. The majority of gas allowables are assigned for equity purposes, resulting in equity matters being of primary consideration in most applications to amend or rescind a GA order.

### 3.6.3 How the EUB Processes the Application

Upon receipt, the EUB reviews the application for completeness according to the following requirements. Particular attention is paid to equity considerations. If pool delineation is an issue (i.e., the EUB's current pool delineation is different from the applicant's and this difference is material to the assignment of the allowable), the EUB will undertake geologic and engineering reviews of the pool delineation. In all cases, contact with offset licensees will be checked to ensure that proper notification is conducted. In particular, contact with any offset licensee that caused the assignment of the original allowable will be ensured. Once the technical, administrative, and equity aspects of the application have been reviewed, a decision will be issued or a hearing will be set to consider the matter. Generally, a hearing is called only if there are bona fide objections to a change in the allowable from an offset licensee or if the EUB does not agree that a change is warranted and the applicant wishes the matter be considered at a hearing.

### 3.6.4 Requirements for an Application to Amend or Rescind a Gas Allowable Order (file 3 copies)

An application under Section 10.300(4) of the *OGCR* to either amend or rescind the maximum daily allowable prescribed to a gas well must include the following. The information required can vary, as noted in the Comments column below, depending on the reason for the original allowable being assigned.

**Administration**

| Requirements | Comments |
|---|---|
| 1) A statement that the application is made in accordance with Section 10.300(4) of the *OGCR*. | This is a legal requirement. |
| 2) The unique well identifier of the well for which you are requesting a change in the allowable. | |
| 3) A summary of the basis of the application. | Why do you believe that the maximum daily allowable should be changed? You may need to address conservation and/or equity, depending on the reason for the original assessment of the allowable to the well. |

**Conservation**

| Requirements | Comments |
|---|---|
| 1) A map showing the net pay isopachs and zero edge of the pool. | The EUB requires this information to confirm the pool extent. The pool's net pay and zero edge must reflect your actual geological interpretation of the pool. |
| 2) A map showing the status of each well completed in the pool. | |
| 3) A map showing the structure of the top and base of porosity and the initial and present fluid interfaces. | This information is required only when the allowable was originally assigned for conservation reasons, and then only when structure is pertinent to the application. |
| 4) A map showing isobars of the pool. | This is generally only required if pool delineation is an issue. |
| 5) Tabulations of<br>a) reservoir parameters,<br>b) the estimated initial in-place volumes of gas and other hydrocarbons in the pool,<br>c) for the pool, the current rate of production of gas, other hydrocarbons, and water and an estimate of the probable pool production rates under the proposed operating conditions, and<br>d) for each well, the current productive capacity, the current average production rate, and the production rate anticipated under the proposed operating conditions. | The information referred to in 5(c) and (d) is generally required for the entire pool only when allowables have been set for an entire pool for conservation reasons or when pool delineation is an issue. When only a portion of the pool is affected by the subject allowable, data on just the subject well and immediately offsetting wells are usually sufficient. |
| 6) Discussions of<br>a) pertinent characteristics or conditions that exist within the pool, including geological factors, reservoir characteristic, general or local fluid interface movements, pressure gradients, areal drainage, or production conditions, | Information referred to in 6(a) and (b) is required only when the allowable was originally assigned for conservation reasons. |

| Requirements | Comments |
|---|---|
| b) the predicted future recovery of gas and other hydrocarbons from the pool under existing production rate limitations and under the proposed operating conditions, particularly the uniformity of drainage within the pool, and<br><br>c) the conservation and administrative benefits that would accrue from granting the application. | |
| 7) An interpreted and annotated log cross-section or representative well log(s) showing<br><br>a) stratigraphic interpretation of the zone(s) of interest,<br><br>b) interpretation of the fluid interfaces present (current and original, if applicable),<br><br>c) completions and treatments to the wellbore(s), with dates,<br><br>d) cumulative production,<br><br>e) finished drilling date and kelly bushing (KB) elevation,<br><br>f) the scale of the log readings, and | This information is required only when the allowable was originally assigned for conservation reasons or when pool delineation is an issue. You may present this cross-section in a number of ways (as one representative well log, several well logs, or a detailed cross-section of the entire pool) depending on the complexity and heterogeneity of the pool. |
| g) a tabulation of your interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | If you do not supply tabulated well data for all wells in the pool, you must explain why the data are not included (e.g., the allowable affects only a portion of the entire pool). As a minimum, you must provide the data for the subject well and all immediately offsetting wells. |
| 8) A discussion of<br><br>a) well completion and recompletion details and assessment of the prospects for control of water production in the future,<br><br>b) operating problems, | The information for 8(a) to (e) is required only when the allowable originally was assigned for conservation reasons. |

| Requirements | Comments |
|---|---|
| c) the effect of increased production on liquid coning, terminal fluid interface position, and interpool interference, | |
| d) the effect on the rates of production of any oil, condensate, or pentanes plus that may be present in the pool if the application is granted, | |
| e) appropriate economic analyses, and | |
| f) pertinent reservoir studies. | The information for 8(f) is required only when the allowable was originally assigned for conservation reasons or when pool delineation is an issue. |

### Notification—Equity

The EUB requires the information described below to establish who potentially adversely affected parties are and whether equity issues may exist. You are encouraged to carry out the notification described here. The EUB reserves the right to advertise any application for its own purposes.

| Requirements | Comments |
|---|---|
| 1) A map showing | This information generally is required only when the allowable originally was assigned for conservation reasons or when pool delineation is an issue. |
| a) the zero edge of the pool, | |
| b) the status of each well completed in the pool, and | |
| c) the licensees in the pool and for 1600 m surrounding the pool that contains the well for which a change to allowable is requested. | Generally, only when allowables have been set for an entire pool for conservation reasons is the full level of notification referred to in 1(c) required. The 1600 m buffer around the pool is included to ensure that no offset licensees have a different interpretation of the pool. In most cases, affected parties are those considered by the EUB to have a productive well in the same geological pool in a drilling spacing unit (DSU) immediately offsetting the subject well.<br><br>If the allowable was established because the subject well is off target, generally only wells in the same geological pool that the subject well is off target towards are |

| Requirements | Comments |
| --- | --- |
| | considered to be affected, in accordance with EUB *Interim Directive (ID) 94-2*.<br><br>If the allowable was originally assigned for equity reasons, the offset licensees that requested that the allowable be set must be contacted. |
| 2) A list of the parties notified regarding the proposed allowable change, the nature of the notification, the date of notification, and any comments received from the notified parties. | |
| 3) A discussion of the effect that granting the application would have on the interests of other owners in the same pool. | |

# Unit 4 Disposal/Storage

## 4.1 Application for Class I-IV Disposal

### 4.1.1 Background

Disposal refers to the injection of fluids for purposes other than enhanced recovery or gas storage. In accordance with the *Oil and Gas Conservation Act*, Section 39(1)(c), EUB approval of a scheme is required for the gathering, storage, and disposal of water produced in conjunction with oil and gas. Section 39(1)(d) requires EUB approval of a scheme for the storage or disposal of any fluid or other substance to an underground formation through a well.

The EUB classifies disposal wells based on the type of injection fluid. This classification system is outlined in EUB *Directive 051*, Section 2.4.

### 4.1.2 When to Make This Application

If disposal of a fluid is required and you are certain that disposal at the proposed location will not cause an environmental or safety hazard and will not result in incremental hydrocarbon recovery, then you should make an application for disposal to the EUB. As identified in EUB *General Bulletin (GB) 2000-8*, the EUB will approve a disposal well prior to completion of *Directive 051* requirements. However, injection may not commence until the requirements of *Directive 051* have been met, submitted, and approved by the EUB.

### 4.1.3 How the EUB Processes the Application

An application for disposal would likely be approved if the EUB is satisfied that

- disposal will not impact hydrocarbon recovery,
- the disposal fluid will be confined to the injection formation,
- offset owners within 1.6 km of the disposal well(s) have been consulted and have no objections or concerns to the disposal scheme, and
- the applicant has the right to dispose into the requested formation.

### 4.1.4 Requirements for an Application for a Disposal Scheme (file 3 copies)

**General**

| Requirements | Comments |
|---|---|
| 1) A description of the proposed disposal scheme, including | |
| a) unique well identifier(s), | |
| b) disposal zone with zone top and base, | |

| Requirements | Comments |
|---|---|
| c) disposal perforations, | |
| d) disposal fluid class, | You should identify the class of the disposal fluid according to the system outlined in *Directive 051*. |
| e) anticipated daily disposal volume(s), | |
| f) injection pressure, | It is not desirable for disposal wells to exceed the fracture pressure because of possible isolation problems. If you are not providing formation fracture data or other information, such as a step-rate injectivity test, to support the requested maximum wellhead injection pressure, you should use *Directive 051*, Appendix 5: Maximum Allowable Wellhead Injection Pressures. |
| g) depth of the production packer, and | The packer should be set within 15 m of the perforation interval. |
| h) the base of the usable groundwater. | Fo groundwater information, see the Alberta Environment Groundwater Database available from EUB Information Services. Produced water disposal cannot occur into the zone of origin or other formations identified as containing usable groundwater because there is no way to monitor or ensure that the produced water is not contaminated by the production process. For more information on this, see *General Bulletin (GB) 2000-8*. |
| 2) A statement on why the proposed well is suitable for disposal. | |
| 3) A statement on why the proposed disposal is required. | |
| 4) An indication of whether you have applied for or obtained approval for related surface facilities. | Surface facility applications must be made in accordance with *Directive 056* or *Directive 058*. |
| 5) Identification of the following: | |
| a) fluid type currently in the disposal interval (i.e., water, gas, or oil), | |
| b) confinement strata, if present, | |

| Requirements | Comments |
|---|---|
| c) porosity and permeability of the disposal zone,<br><br>d) viscosity of the injected fluid and the reservoir fluid, and<br><br>e) the distance between the proposed disposal well(s) and any hydrocarbon pool or accumulation. | |
| 6) An interpreted and annotated log cross-section or representative well log(s) showing<br><br>a) stratigraphic interpretation of the zone(s) of interest,<br><br>b) interpretation of the fluid interfaces present,<br><br>c) completions and treatments to the wellbore(s), with dates,<br><br>d) cumulative production,<br><br>e) finished drilling date and kelly bushing (KB) elevation, and<br><br>f) the scale of the log readings. | |

## Conservation

If disposal is to occur into a hydrocarbon pool or an associated aquifer, it must be evident that it will not have a detrimental effect on ultimate hydrocarbon recovery from the pool.

If the proposed disposal well is more than 1.6 km from any hydrocarbon pool or accumulation, you may omit requirements relating to conservation.

| Requirements | Comments |
|---|---|
| 1) Identification of the EUB-designated pool to receive the disposal fluid and/or any EUB-designated pool within 1.6 km of the proposed disposal well. | |
| 2) A statement on whether incremental hydrocarbon recovery is anticipated as a result of the proposed injection. If it is, state the incremental volume relative to the original oil in place (OOIP). | If incremental recovery is anticipated as a result of the proposed injection, consider applying for enhanced recovery rather than disposal. |

| Requirements | Comments |
|---|---|
| 3) Discussion on the stage of depletion of the recipient pool. | |
| 4) A statement on whether the pool contains an oil-water (o/w) or gas-water (g/w) contact. If it does, are the injection perforations below that contact? | If disposal occurs into a depleted pool or below the oil-water or gas-water contact, the negative impact of this disposal on ultimate recovery from the pool would usually be minimal. |
| 5) An explanation of why the proposed disposal would not be detrimental to ultimate hydrocarbon recovery from the pool. | |
| 6) Discussion on whether the proposed injection would have an impact on any producing wells in the pool. If it would, provide details. If it would not, support your view. | |
| 7) If EUB-approved water disposal is currently occurring in the pool, a list of those disposal wells and comments as to how the proposed disposal is compatible with the current disposal locations. | Multiple disposal wells in a pool require careful placement in order to avoid overinjection in any one part of the pool and to avoid trapping losses. |
| 8) Discussion on whether there is an enhanced recovery scheme in the subject pool. If there is, explain why the proposed disposal cannot be incorporated into the scheme and why or how the proposed disposal is compatible with the current injection. | |
| 9) A net pay isopach map of the pool, including both oil and gas if there is an associated pool. | |
| 10) If pool delineation or fluid interface locations are based on structural interpretation, a structure contour map of the pool and offsetting area. | |

| Requirements | Comments |
|---|---|
| 11) A tabulation of your interpreted net pay, porosity, and water saturations for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | If you do not supply tabulated well data for all wells in the pool, you must explain why (e.g., the area of application is very small relative to the entire pool). |

### Hydraulic Isolation

Disposal approvals specify the disposal zone and limit injection to that zone only. Migration of disposal fluids to other zones is highly undesirable. Therefore, a suite of logs is required for all injection wells in the province in order to confirm the absence of flow of injected fluid behind the casing. For more details on the logging requirements, see EUB *Directive 051*. The EUB will monitor to ensure that *Directive 051* requirements have been met prior to the commencement of injection.

| Requirements | Comments |
|---|---|
| 1) For disposal wells injecting hydrogen sulphide ($H_2S$) and Class I disposal, all completion logging, testing requirements, and associated discussion required by *Directive 051*. | All $H_2S$ and Class I disposal wells must meet the *Directive 051* requirements prior to the wells going on injection and prior to the approval being issued. It is necessary to ensure that the integrity of the wellbore will prevent contamination of other zones and protect all groundwaters. A preliminary review of the application and a letter noting approval in principle pending successful *Directive 051* completion and proven injectivity may be issued if you desire to proceed with the application in two stages. |
| 2) In order to prove hydraulic isolation for Class II-IV, provide the following:<br>a) the completion logs and associated discussion required by *Directive 051* for all proposed disposal wells, **or**<br>b) a discussion of the plans for complying with *Directive 051*, **or**<br>c) a request for waiver of the *Directive 051* requirements, **or** | You should specify in the application whether the proposed disposal wells are in compliance with *Directive 051* requirements. If they are not, provide a discussion of the plans to bring the wells into compliance with *Directive 051* or indicate that a waiver is requested or has been approved. It is not necessary for *Directive 051* requirements to be met in order for a disposal scheme approval to be issued except when $H_2S$ or Class I disposal is requested.<br>All disposal well completions must meet the *Directive 051* requirements prior to the wells |

| Requirements | Comments |
|---|---|
| d) a copy of an EUB letter waiving the *Directive 051* requirements. | going on injection in order to ensure that hydraulic isolation of the disposal interval exists at the wellbore and that the disposal fluid will enter the intended reservoir interval.<br><br>The EUB will permit injection of up to 500 $m^3$ of water to obtain the required isolation logs.<br><br>If you have met *Directive 051* requirements for the proposed disposal wells, you must include the completion logs and associated discussions required by the directive. The EUB will then handle all matters pertaining to the completion approval(s) concurrently with the scheme approval.<br><br>**If you have not met *Directive 051* requirements, disposal may NOT commence until you have received a letter from the EUB stating that the *Directive 051* requirements have been met and injection can commence.** |
| 3) If you are requesting an extension to the three-month *Directive 051* submission date, provide<br><br>a) the proposed submission date, and<br><br>b) the reasons(s) for needing the submission date extension. | Disposal well approvals issued in advance of *Directive 051* requirements being met will contain a clause requiring that the *Directive 051* information be submitted within three months of the approval's issue date. If three months is not sufficient time to meet the *Directive 051* requirements, you must request an extension. |
| 4) When submitting *Directive 051* information after the approval has been issued, you should provide the field and pool name, the disposal scheme approval number, and the well location(s). | If the *Directive 051* requirements are not submitted within the three months or other approved time frame, EUB staff will rescind the approval or portion pertaining to the subject wells. For more information on submission requirements and the disposal approval process, see EUB *General Bulletin (GB) 2000-8*. |

### Equity—Class II-IV Only

Disposal could occur into or near a multiownership pool, and owners' views on the impact of the disposal might vary. Note that, as identified in Tables 1 and 2 of the Resources Applications Notification Guidelines, notification requirements differ for waste and other disposal fluid types. For waste disposal applications, see the section on Oilfield or Industrial Waste Fluid Disposal below.

| Requirements | Comments |
|---|---|
| 1) A list of all potentially adversely affected parties (unit operators, approval holders, and/or well licensees) within a 1.6 km radius from the proposed disposal well(s) where the proposed disposal zone is known to be present. | If a pool is subject to unit operations or other approvals, in most cases you may notify the unit operator or approval holder on behalf of the relevant group having an interest in the pool. Otherwise, you should normally notify individual well licensees. |
| 2) A statement as to whether you have contacted the above parties respecting the application and, if so, confirmation of nonobjection or specific details regarding objections or concerns. | If discussions concerning the application are continuing with offset operators, you should provide details as part of the application. |
| 3) Evidence of your right to dispose into the proposed zone. | Proof of the right to dispose in a formation is as follows:<br>• unleased Crown land—a letter of consent from the Crown,<br>• Freehold lease land—consent from the Freehold mineral holder, and<br>• leased by other than the applicant—a letter of consent from the lease holder. |

### Oilfield or Industrial Waste Fluid (Class I) Disposal

The following are further requirements pertaining to Class I disposal only. Note that generally you must obtain a surface facility approval from the EUB Facilities Waste Management Section and/or Alberta Environment before the EUB may issue a waste disposal well approval. For more information on waste facility applications, see EUB *Directive 058*. You may obtain information on industrial waste facilities applications from the appropriate Alberta Environmental Corporate Regional office.

| Requirements | Comments |
|---|---|
| 1) Evidence of notification to and consent from the surface owner and/or occupant within a radius of 0.5 km from the proposed disposal well. | In view of the possible hazardous nature of waste disposal fluids, extra precautions are taken to ensure containment. |
| 2) Evidence of notification to and consent from potentially adversely affected parties (unit operators, approval holders, well licensees, mineral lessees, and/or mineral lessors) within a 1.6 km radius of the proposed disposal well. | If a pool is subject to unit operations or other approvals, in most cases you may notify the unit operator or approval holder on behalf of the relevant group having an interest in the pool. Otherwise, you should normally notify individual well licensees. |
| 3) Evidence of your right to dispose into the proposed zone. | Proof of the right to dispose in a formation is as follows:<br>• unleased Crown land—a letter of consent from the Crown,<br>• Freehold lease land—consent from the Freehold mineral holder, and<br>• leased by other than the applicant—a letter of consent from the lease holder. |
| 4) A discussion of the geological setting of the proposed disposal zone, including the integrity of the base and caprock and the stratification within the reservoir and reservoir parameters, giving vertical and horizontal permeabilities, thickness, and areal extent. | |

| Requirements | Comments |
|---|---|
| 5) A discussion of the maximum expected area of influence surrounding the proposed well over the life of the scheme, including a discussion of any pressure gradients that exist as a result of past or current production or injection operations. | |
| 6) Confirmation that all wells within the area of influence have been completed or abandoned in such a manner that they will not provide a path for the migration of the injected fluid or substance to another formation. | Oilfield or industrial waste fluids must **not** be disposed into a zone that has current production or the potential for future production. |
| 7) In the case of slurry fracture injection of sand, details of the surface elevation monitoring that will be done within 800 m of the proposed disposal well to monitor the impact of slurry fracture injection of sand above the formation fracture pressure. | |
| 8) Injection logs and analysis in accordance with *Directive 051*. | Confirmation of hydraulic isolation is required before the EUB will issue an approval for waste disposal. This requirement differs from Class II-IV disposal because of a greater concern about waste contamination. For more details see *General Bulletin (GB) 2000-8*. |
| 9) Evidence of compliance with the completion and testing requirements in *Directive 051*. | |

## 4.2 Application for Acid Gas Disposal

### 4.2.1 Background

Acid gas disposal has become a cost-effective means to dispose of uneconomic quantities of hydrogen sulphide ($H_2S$) and carbon dioxide (acid gas) into underground formations. The formation types that the EUB typically considers suitable for disposal are depleted hydrocarbon-bearing zones or unusable-water-bearing zones. The disposal of these waste by-products can reduce public concern resulting from sour gas production and flaring. Section 39(1)(d) of the *Oil and Gas Conservation Act* requires that no scheme for the disposal of any fluid to an underground formation shall proceed unless approved by the EUB.

### 4.2.2 Requirements for an Application for an Acid Gas Disposal (file 3 copies)

**Containment**

| Requirements | Comments |
|---|---|
| 1) Your geological interpretation of the acid gas disposal formation involved, including<br><br>a) net pay isopach map of the pool,<br><br>b) where pool delineation or fluid interfaces are based on structural interpretation, a structural contour map of the pool and offsetting area,<br><br>c) an interpreted and annotated log cross-section or representative well log(s), showing<br><br>i) stratigraphic interpretation of the zone(s) of interest,<br><br>ii) interpretation of the fluid interfaces present,<br><br>iii) completions/treatments to the wellbore(s), with dates,<br><br>iv) cumulative production,<br><br>v) finished drilling date and kelly bushing (KB) elevation, and<br><br>vi) the scale of the log readings, and | It is necessary to determine that there will be containment of the disposal fluid within a defined area and geologic horizon to ensure that there is no migration to hydrocarbon-bearing zones or groundwaters. To address this issue, you must provide a suite of geological evidence. |

| Requirements | Comments |
|---|---|
| d) tabulation of your interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | |
| 2) For bounding formations, information including<br><br>a) continuity and thickness of base and caprock,<br><br>b) lithology,<br><br>c) integrity of the base and caprock,<br><br>d) if fracturing is evident, explanation of how containment can be assured, and<br><br>e) a comment on the stratigraphic, structural, or combination reservoir trap type and its containment features. | |

**Reservoir**

| Requirements | Comments |
|---|---|
| 1) Analysis of the native reservoir fluid(s). | The impact of the disposal fluid on the reservoir rock matrix, native fluid, and the pressure variations subjected to the disposal zone requires that you address phase behaviour, pressure, and migration issues. |
| 2) Acid gas properties, including<br><br>a) composition,<br><br>b) viscosity, density, gas injection formation volume factor, and compressibility factors, and<br><br>c) phase behaviour through the range of pressures and temperatures to which the injected fluid will be subjected. | |
| 3) An analysis of laboratory testing for | |

| Requirements | Comments |
|---|---|
| determining injected fluid interaction with matrix, caprock matrix, and native fluid(s). | |
| 4) Migration calculation showing radius of influence, as well as a discussion if migration could occur due to displacement, gravity, fingering, etc. (not required for depleted reservoirs less than two sections in areal extent). | |
| 5) Complete pressure history of the pool, with material balance calculations if proposed disposal zone is a depleted hydrocarbon pool. | |
| 6) Bottomhole injection pressure, maximum sandface pressure, caprock threshold pressure, fracture propagation pressure, and formation fracture pressure. | It is not desirable for disposal wells to exceed the fracture pressure because of possible isolation problems. If you are not providing formation fracture data or other information, such as a step-rate of injectivity test, to support the requested maximum wellhead injection pressure, use *Directive 051*, Appendix 5. |
| 7) Injectivity of the reservoir, proposed daily maximum injection rate, cumulative disposal volume, and expected life of the scheme. | |

**Hydraulic Isolation**

| Requirements | Comments |
|---|---|
| 1) For acid gas disposal wells injecting $H_2S$, all completion data, well logs, testing requirements, and associated discussion, as described in *Directive 051*. | All $H_2S$ disposal wells must meet the *Directive 051* requirements prior to the wells going on injection and prior to the approval being issued. It is necessary to ensure that the integrity of the wellbore will prevent contamination of other zones and protect all groundwaters. The EUB may issue a preliminary review of the application and a letter noting approval in principle pending successful *Directive 051* completion and proven injectivity if you desire to do the application in two stages. |

| Requirements | Comments |
|---|---|
| 2) For non-$H_2S$ gas disposal provide<br><br>a) the completion logs and associated discussion required by *Directive 051* for all proposed disposal wells, or<br><br>b) a discussion of the plans for complying with *Directive 051*, or<br><br>c) a request for waiver of the *Directive 051* requirements, or<br><br>d) a copy of an EUB letter waiving the *Directive 051* requirements. | You should specify in the application whether the proposed disposal wells are in compliance with *Directive 051* requirements. If they are not, provide a discussion of the plans to bring the wells into compliance with *Directive 051* or indicate that a waiver is requested or has been approved. It is not necessary for *Directive 051* requirements to be met in order for a disposal scheme approval to be issued except when $H_2S$ is to be injected.<br><br>All disposal well completions must meet the *Directive 051* requirements prior to the wells going on injection in order to ensure that hydraulic isolation of the disposal interval exists at the wellbore and that the disposal fluid will enter the intended reservoir interval.<br><br>The EUB will permit injection of up to 500 $m^3$ of water to obtain the required isolation logs.<br><br>If the proposed disposal wells meet *Directive 051* requirements, you must include the completion logs and associated discussions required by the directive. The EUB will then handle all matters pertaining to the completion approval(s) concurrently with the scheme approval. The EUB will review the scheme shortly after the approval is issued and undertake enforcement action if disposal has not commenced as specified in the approval.<br><br>**If you have not met *Directive 051* requirements, disposal may NOT commence until you have received a letter from the EUB stating that the *Directive 051* requirements have been met and injection can commence.** |

| Requirements | Comments |
|---|---|
| 3) If requesting an extension to the three-month period for *Directive 051* submission date, provide<br><br>a) the proposed submission date, and<br><br>b) the reason(s) for needing the submission date extension. | Disposal well approvals for non-$H_2S$ gas injection issued in advance of *Directive 051* requirements being met will contain a clause requiring that the *Directive 051* information be submitted within three months of the approval's issue date. If three months is not sufficient time to meet the *Directive 051* requirements, you must request an extension.<br><br>If the *Directive 051* requirements are not submitted within the three months or other approved time frame, EUB staff will rescind the approval or portion pertaining to the subject wells. For more information on submission requirements and the disposal approval process, see *General Bulletin (GB) 2000-8*. |
| 4) When submitting *Directive 051* information after the approval has been issued, provide the field and pool name, the disposal scheme approval number, and the well location(s). | |
| 5) Provide the following information for either 1) all the wells in the pool if disposal is into a depleted hydrocarbon pool or 2) all the wells within the disposal well section and adjoining sections if disposal is into an aquifer system:<br><br>a) well location,<br><br>b) status of well,<br><br>c) completion intervals, and<br><br>d) all casing information. | There must be hydraulic isolation between the disposal fluid and any other wellbores drilled into or through the disposal zone. |

**Notification—Equity and Safety**

| Requirements | Comments |
|---|---|
| 1) Evidence of your right to dispose into the proposed zone. | Proof of the right to dispose in a formation is as follows:<br>• unleased Crown land—a letter of consent from the Crown,<br>• Freehold lease land—consent from the Freehold mineral holder, and<br>• leased by other than the applicant—a letter of consent from the lease holder. |
| 2) Provide<br>a) a map showing the boundaries of the disposal pool or the area within the disposal section and the adjoining offset sections up to a 1.6 km radius with well licensees, mineral right lessees, and lessors recorded, and<br>b) a statement confirming that all potentially adversely affected parties that may be impacted have been notified and giving any details of outstanding objections or concerns to the proposed scheme. | Disposal could occur into or near a multiownership pool, and owners' views on the impact of the disposal might vary. You must notify all lessors, lessees, and well licensees within the depleted hydrocarbon pool OR within the disposal section and the adjoining offset sections up to a 1.6 km radius if disposal is into an aquifer system.<br>If a pool is subject to unit operations or other approvals, in most cases you must notify the unit operator or approval holder on behalf of the relevant group having an interest in the pool. Otherwise, you should notify individual well licensees.<br>If discussions concerning the application are continuing with offset operators, you should provide details as part of the application. |
| 3) If the injected fluid contains any $H_2S$, a statement indicating that notification of the scheme for emergency response plan (ERP) purposes has been made to all potentially adversely affected parties. Include the details of any outstanding objections or concerns from the notified parties. | If facilities may pose a risk to the public, ERP requirements must be met prior to commencement of operations. Generally, an ERP is required if a risk assessment indicates that there are members of the public within a defined hazard area. ERPs are approved and reviewed for compliance by the Operations Group of the EUB. Contact Production Operations (403-297-2625) if further information is needed. |

## 4.3 Application for Underground Gas Storage

### 4.3.1 Background

The storage of gas into underground hydrocarbon reservoirs can be for production-motivated reasons or commercial operations. Production-motivated schemes are usually characterized by the temporary storage of gas occurring at or near the producing pools. They can allow for the more efficient use of production and processing facilities and may also be of benefit in market-related situations. Commercial gas storage schemes are designed to provide an efficient means of balancing supply with a fluctuating market demand. These schemes store third-party nonnative gas, allowing marketers to take advantage of seasonal price differences, effect custody transfers, and maintain reliability of supply. Gas from many sources may be stored at commercial facilities under fee-for-service, buy-sell, or other contractual arrangements.

The EUB regulates gas storage operations to ensure that all gas conservation, equity, environment, and safety issues are addressed and to maintain up-to-date estimates of provincial gas reserves and deliverability.

### 4.3.2 Terms of Application

An application for approval of a new scheme or amendment to an existing scheme for the underground storage of gas is made under Section 39(1)(b) of the *Oil and Gas Conservation Act*. It must initially include the requirements detailed below and possibly other information if EUB staff find that necessary for evaluation purposes.

### 4.3.3 Application Requirements for Underground Gas Storage (file 3 copies)

#### Conservation

The EUB is concerned about any reserve losses that may occur through gas storage. Reservoir containment of the gas, gas trapping by water, excessive water production, and the dilution of produced gas by acid gas are the primary issues that need to be evaluated.

| Requirements | Comments |
|---|---|
| 1) Your geological interpretation of the pool, including | |
| a) a net pay isopach map of the pool, including both oil and gas if there is an associated pool, | If the pool has a good geological history that is well defined, only one representative well log is likely required. However, if the pool is complex and has had recent development, you should provide several well logs to a detailed cross-section of the pool. If the geological interpretation submitted is not adequately done, processing delays could result. |
| b) if pool delineation or fluid interface locations are based on structural interpretation, a structure contour map of the pool and offsetting area, | |
| c) an interpreted and annotated log cross-section or representative well log(s) showing | |

| Requirements | Comments |
|---|---|
| i) stratigraphic interpretation of the zone(s) of interest,<br><br>ii) interpretation of the fluid interfaces present,<br><br>iii) completions and treatments to the wellbore(s), with dates,<br><br>iv) cumulative production,<br><br>v) finished drilling date and kelly bushing (KB) elevation, and<br><br>vi) the scale of the log readings, and<br><br>d) a tabulation of your interpreted net pay, porosity, and water saturation for each well in the pool, along with the cutoffs, methodology, formulas, and constants used. | |
| 2) Maximum bottomhole injection pressure and maximum average reservoir pressure. | This information defines the upper limit to the operating pressures of the scheme. |
| 3) Complete tabulated pressure history of the pool (date, well, type of test, stabilized pressure), along with a P/Z versus cumulative gas production plot if the pool is a nonassociated gas pool, or material balance calculations if storage is into a gas cap in communication with an oil leg. | This history indicates pressure support from the aquifer and how the reservoir may react to storage. |
| 4) Gas analysis of the native reservoir fluid and the proposed injected gas stream(s). | This describes what the compositions of the gases are before they become mixed. |
| 5) Discussion of how the storage of gas will be consistent with sound conservation practices. | |
| 6) If at any time during storage, the average reservoir pressure will exceed the initial pool pressure (i.e., delta pressuring is being applied for), then reservoir containment of gas becomes a concern and the following are required: | |

| Requirements | Comments |
|---|---|
| a) for the storage formation, a list of the formation fracture pressure and fracture propagation pressure, with a description of how they were determined, and | It is necessary to determine if the storage formation will be fractured and/or the extent to which the fractures may spread. |
| b) for the bounding formations, | |
| i) the continuity and thickness of base and caprock, | |
| ii) lithology, | |
| iii) evidence of fracturing, | |
| iv) a comment on the integrity of the base and caprock (stratigraphic, structural, or combination) and its containment features, and | |
| v) caprock threshold pressure. | |
| 7) If there is an active aquifer system present, the trapping of gas displaced into the rising aquifer is a concern and the following are required: | |
| a) any measured changes in the gas/water contact, and | This will indicate where trapped gas can occur. |
| b) impact from the aquifer, including quantifying the amount of displaced gas that will be trapped. | This will state the impact by the aquifer and indicate whether it is a concern for storage. |
| 8) If there are wells in the pool that have produced or are producing with high water/gas ratios (e.g., over 100 $m^3/10^6 m^3$), loss of wells due to water coning or channelling is a concern and the following are required: | |
| a) production history for the wells with high water/gas ratios, and | This will show where the water problems may be occurring in the pool and how they were/are handled. |
| b) a discussion on how the water production is controlled. | |

### Pool Reserves and Deliverability Information

The EUB updates and publishes pool reserves data annually. For this reason it needs to understand the operations at the pool. Commercial gas storage pools are also listed in the annual reserves report, but rather than showing the remaining reserves for these pools, the storage capacity and maximum deliverability are published.

| Requirements | Comments |
|---|---|
| 1) An estimate of the initial gas and oil volumes in place. | This information will indicate the initial producible gas reserves. |
| 2) An estimate of the gas and oil recovery factors. | |
| 3) A description of the methods used in determining the initial gas/oil volumes in place and the respective recovery factors (e.g., material balance, volumetric analysis, model study, and a comparison of analog pools). | |
| 4) The supporting data used in determining the first two points as outlined above and the sources of the data (e.g., pressure/volume/temperature [PVT] properties and source, pressure data and source). | |
| 5) Remaining native gas in place and the cushion gas required for storage operations. | It is important to determine the remaining native gas in place before storage commences and what additional gas needs to be injected to meet the cushion gas requirements. |
| 6) Working gas volumes. | This information will determine the storage capacity of the pool. |
| 7) Deliverability and injectivity of the reservoir under the range of operating conditions. | This information will indicate the production and injection capabilities of the pool. |

## Equity

Equity is an important issue for gas storage pools, since competitive gas production would be detrimental to storage scheme operations. Therefore, it is advisable that you own all of the mineral right leases in the pool and adjoining sections or at least have a production-sharing agreement and written consent from the other owners that could be impacted.

It is also strongly advised that if some land is still available for sale, you purchase this land before considering the pool for storage.

The lessors must also provide consent for storage, since a special royalty agreement covering the remaining producible gas reserves may be required.

If all potential equity concerns are addressed before the scheme is approved, a costly and complicated hearing process may be avoided in the future.

You must notify all lessees and lessors within the area of the storage pool and adjoining offsetting sections. Notification must cover all zones, including those that either underlie or overlie the storage pool. You must also notify all well licensees in the pool.

| Requirements | Comments |
|---|---|
| 1) A map showing the boundaries of the storage pool (both EUB pool outline and your pool outline), along with the well licensees and mineral right lessees and lessors that are within these boundaries, as well as those that lie outside in the offsetting sections. | |
| 2) A statement confirming that you have notified all parties that may be impacted, either negatively or positively, and that they have no objection or concerns to the proposed storage scheme (this includes, but is not limited to, the groups listed in item 1 above). | |
| 3) A list of all objections or concerns received. | |
| 4) If you do not hold all of the mineral right leases in the pool, an indication of the area in the pool where you do not own the mineral right leases and an explanation of why you have not purchased them. | It is important to understand the risk involved with a competing company buying mineral rights and drilling a productive well. |

## Environment and Safety

The EUB is also responsible for environmental and safety issues when approving gas storage schemes. Therefore all injection wells must meet the requirements of EUB *Directive 051* to ensure that the integrity of the wellbore will prevent contamination of other zones and to protect all groundwaters.

| Requirements | Comments |
|---|---|
| 1) For gas storage wells injecting hydrogen sulphide ($H_2S$), all completion data, well logs, testing requirements, and associated discussions, as described in *Directive 051*. | All gas storage wells injecting gas containing $H_2S$ must meet *Directive 051* requirements prior to the wells going on injection and prior to the approval being issued. It is necessary to ensure that the integrity of the wellbore will prevent contamination of other zones and protect all groundwaters. A preliminary review of the application and a letter noting approval in principle pending successful *Directive 051* completion and proven injectivity may be issued if you desire to do the application in two stages. |
| 2) For non-$H_2S$ gas storage, provide<br>a) the completion logs and associated discussion required by *Directive 051* for all gas storage wells, or<br>b) a discussion of your plans for complying with *Directive 051*, or<br>c) a request for waiver of the *Directive 051* requirements, or<br>d) a copy of an EUB letter waiving the *Directive 051* requirements. | You should specify in the application whether the proposed gas storage wells are in compliance with *Directive 051* requirements. If they are not, provide a discussion of the plans to bring the wells into compliance with *Directive 051* or indicate that a waiver is requested or has been approved. It is not necessary for *Directive 051* requirements to be met in order for a gas storage scheme approval to be issued except when $H_2S$ is to be injected. |
| 3) When requesting an extension to the three-month period for *Directive 051* submission, provide<br>a) the proposed submission date, and<br>b) the reason(s) for needing the submission date extension. | For gas storage scheme approvals for non-$H_2S$ gas injection issued in advance of *Directive 051* requirements being met, the EUB will expect you to submit the *Directive 051* information within three months of the approval's issue date. If three months is not sufficient time to meet the *Directive 051* requirements, you must request an extension. |

| Requirements | Comments |
|---|---|
| 4) When submitting *Directive 051* information after the approval has been issued, provide the field and pool name, the disposal scheme approval number, and the well location(s). | If you do not submit the *Directive 051* requirements within the three months or other approved period, the EUB will rescind the gas storage approval or portion referencing the specific well(s).<br><br>If *Directive 051* has been met for the proposed gas storage wells, you must include the completion logs and associated discussion required by the directive. The EUB will then handle all matters pertaining to the completion approval(s) concurrently with the scheme approval.<br><br>**If you have not met *Directive 051* requirements for the proposed storage well(s), in no case shall injection to the gas storage well(s) commence until you have received a letter from the EUB indicating that *Directive 051* requirements have been met.** |
| 5) If the injected fluid contains any $H_2S$, a statement is required indicating that notification of the scheme for emergency response plan (ERP) purposes has been made to all potentially adversely affected parties. You must include the details of any outstanding objections or concerns from the notified parties. | Where facilities may pose a risk to the public, ERP requirements must be met prior to commencement of operations. Generally, an ERP is required if a risk assessment indicates that there are members of the public within a defined hazard area. ERPs are approved and reviewed for compliance by the Operations Group of the EUB Surveillance Branch (call 403-297-2625 if you require further information). |

### Monitoring Scheme Operation

After a storage scheme has been approved and is placed into operation, the performance of the scheme becomes an issue. The EUB is interested in ensuring that the scheme will be operated within the conditions of the approval.

| Requirements | Comments |
|---|---|
| 1) A discussion of the monitoring program, including the frequency and method of measuring the bottomhole and/or top-hole pressures. | This discussion will determine how the scheme will be operated to ensure that the approval conditions will not be exceeded. |

# Unit 5 Corporate Changes

## 5.1 Change in Name of Approval Holder

### 5.1.1 Background

In accordance with Section 15.080 of the *Oil and Gas Conservation Regulations*, the operator of a scheme approved under Section 39 of the *Oil and Gas Conservation Act* should apply to amend the approval to show the name change that has occurred since the scheme was approved.

### 5.1.2 Requirements for an Application for a Change in Name of Approval Holder (file 3 copies)

| Requirements | Comments |
|---|---|
| 1) Approval number. | As an operator doing business in Alberta, it is your responsibility to keep the appropriate documents current. |
| 2) Field and pool named on the approval. | |
| 3) Type of scheme. | |
| 4) a) Evidence of the change in name, or<br>b) details on when such evidence was filed with the EUB. | For a name change to multiple schemes, you may attach a list of the approvals, including the numbers, field and pool, and type of scheme.<br><br>The EUB requires the current scheme approval name so that staff can effectively conduct appropriate surveillance of the scheme and can update documents and publications made available to the public and industry. |

## 5.2 Change of Approval Holder

### 5.2.1 Background

In accordance with Section 15.080 of the *Oil and Gas Conservation Regulations*, the operator of a scheme approved under Section 39 of the *Oil and Gas Conservation Act* should apply to amend the approval to show the change of holder of the approval if the scheme has been sold or divested.

### 5.2.2 Requirements for an Application for a Change of Approval Holder (file 3 copies)

| Requirements | Comments |
|---|---|
| 1) Approval number. | It is important that companies purchasing new properties in Alberta understand the terms and conditions of the scheme and that they update the appropriate EUB documents. This also enables EUB staff to effectively conduct appropriate surveillance of the scheme.<br><br>You may use the Transfer of Approval form in Appendix D. |
| 2) Field and pool named on the approval. | |
| 3) Statements by the present holder and the proposed new holder agreeing to the change. | |
| 4) A statement by the proposed new holder stating the circumstances giving rise to the application. | |
| 5) A statement by the proposed new holder stating that he/she is aware of the details of the scheme and is prepared to carry out the scheme. | |
| 6) If the present holder no longer exists, evidence that the proposed new holder is the proper person/company to assume responsibility for the scheme, with a Gazette reference that the present holder is no longer in existence. | |

# Unit 6 Gas and Ethane Removal

## 6.1 Background

The removal of natural gas from the province of Alberta is governed by the *Gas Resources Preservation Act* (*GRPA*). A major reason for gas removal permits is to control the amount of gas leaving the province and thereby ensure that Albertans have an adequate supply. The EUB completes an annual calculation that indicates whether or not there is gas available for inclusion in gas removal permits, taking into account a 15-year supply for the core Alberta market and obligations resulting from existing gas removal permits. *Report 87-A: Gas Supply Protection for Alberta*, available from EUB Information Services, presents the EUB's policies on gas supply matters. While the forms and procedures in this document have been superseded, the report continues to provide valid information regarding gas supply protection for Alberta.

As set out in the *GRPA*, there are two types of gas removal permits:

- Short-term gas removal permits involve the removal of not more than 3 billion cubic metres ($m^3$) of gas over a period of not more than two years. These permits may be used for any market.
- Long-term gas removal permits involve the removal of gas in volumes greater than 3 billion $m^3$ of gas or permit terms longer than two years. These permits are market specific and may be used only to serve the market(s) described in the applications that resulted in the permits.

This directive replaces *Informational Letter (IL) 96-5: Requirements for Applications for Permits to Remove Gas from Alberta*. The directive updates existing requirements but does not introduce any changes in gas removal policy or new requirements for applications for the removal of natural gas. Additionally, the directive sets out the requirements for ethane removal permits. These requirements were not previously set out in any document but were handled on an ad hoc basis.

## 6.2 When to Make This Application

Under the *GRPA*, any party wishing to remove natural gas or ethane out of Alberta must apply to the EUB under Section 2 of the *GRPA* for a permit to authorize such removal of gas. No EUB permits are required to take propanes, butanes, pentanes, other natural gas liquids, or oil out of Alberta. No permits from the EUB are required to import gas into the province.

If there are corporate changes such that the party desiring to use a permit is not the permittee named in the permit, an application must be filed to amend the permit holder name in the permit.

## 6.3 How the EUB Processes the Application

Applications for gas and ethane removal permits and for amendments of existing gas removal permits must be filed using one of the application forms included in Appendix G.

### 6.3.1 Short-Term Gas Removal Application Form

This form must be used to apply for a new permit or to amend an existing permit authorizing the removal of natural gas of not more than 3 billion $m^3$ of gas over a period of not more than two years.

The EUB's practice is to allow one short-term gas removal permit per company. When the EUB receives a completed application form, it reviews the information provided to determine if it is consistent with the standard EUB practices and the *GRPA*, as discussed in this section. An applicant is not required to give notification to any party or advertise its intent to apply for new short-term gas removal permit or for an amendment to an existing short-term permit. The EUB does not issue any notice of these applications.

If the application is acceptable, the EUB approves it through the issuance of a gas removal permit. Any party may obtain information respecting when and how many short-term gas removal permits are issued by reviewing the EUB publication *ST48: Alberta Gas Removal and Related Applications*, which notes new permits issued in any month, together with existing valid permits.

### 6.3.2 Long-Term Gas Removal Application Form

This form must be used to apply for a new permit or to amend an existing permit authorizing the removal of natural gas in volumes greater than 3 billion $m^3$ of gas or for permit terms longer than two years.

The EUB's standard practice is to allow each company to hold one long-term gas removal permit. Some companies were able to obtain numerous long-term gas removal permits prior to the EUB implementing this practice. In these cases, the EUB will not allow the company to obtain any further separate long-term removal permits, but will require the company to consolidate existing permits into one permit to serve the existing markets, as well as specific new markets.

When the EUB receives a completed application form, it reviews the information provided to determine if it is consistent with the standard EUB practices and the *GRPA*, as discussed in this section. An applicant is not required to give notification to any party or advertise its intent to apply for a long-term gas removal permit or for an amendment to an existing long-term permit. However, as a general practice, the EUB publishes notice of any long-term gas removal application in major provincial newspapers as part of processing the application, since these applications may affect the public interest. If the EUB receives objections to an application, the EUB may hold a public hearing to consider the application.

When approval of the application is granted, the EUB proceeds with the steps required to issue the new long-term gas removal permit or the amendment to a long-term gas removal permit. This includes obtaining the approval of the Lieutenant Governor in Council to issue the permit.

As in the case for a short-term gas removal permit, any party may obtain information respecting when and how many long-term gas removal permits are issued by reviewing the EUB publication *ST48: Alberta Gas Removal and Related Applications*, which notes new permits issued in any month, together with existing valid permits.

### 6.3.3 Short-Term Ethane Removal Application Form

This form must be used to apply for a new permit or to amend an existing permit authorizing the removal of ethane of not more than 3 billion $m^3$ of gas over a period of not more than two years.

The EUB's practice is to allow one short-term ethane removal permit per company. When the EUB receives a completed application form, it reviews the information provided to determine if it is consistent with the standard EUB practices and the *GRPA*, as discussed in this section. An applicant is not required to give notification to any party or advertise its intent to apply for a short-term ethane removal permit or for an amendment to an existing permit. However, depending on the current supplies of ethane in the province at any time, the EUB may issue notice of the ethane removal permit application in major provincial newspapers as part of processing the application. If the EUB receives objections to an application, the EUB may hold a public hearing to consider the application.

When approval of the application is granted, the EUB proceeds with the steps required to issue the ethane removal permit or the amendment to an ethane removal permit. This includes obtaining the approval of the Minister of Energy to issue the permit.

As in the case for permits to remove natural gas from Alberta, any party may obtain information respecting when and how many ethane removal permits are issued by reviewing the EUB publication *ST48: Alberta Gas Removal and Related Applications*, which notes new permits issued in any month, together with existing valid permits.

### 6.3.4 Long-Term Ethane Removal Application Form

No application form for a permit authorizing the removal of ethane in volumes greater than 3 billion $m^3$ over permit terms longer than two years has been constructed, as the EUB does not anticipate any requests of this type in the near term.

## 6.4 Reporting Natural Gas and Ethane Removed from Alberta

A key regulatory mandate of the EUB, as set out in Section 2(f) of the *Energy Resources Conservation Act*, is to provide for the recording and timely and useful dissemination of information regarding the energy resources of Alberta. Accordingly, upon the commencement date of a permit for the removal of natural gas or ethane, the company holding the permit, or its agent, must file a monthly report with the EUB stating the volume of gas removed and other related information. The gas removal permit data are captured electronically by the Gas Removal Data (GRD) system. All parties must file data electronically; the EUB will not accept any gas removal permit data in a paper format. More information on the reporting of gas removed from Alberta under a permit is provided in *Bulletin 2006-42: Gas Removal Data System Compliance Process*. Questions on the reporting of gas removed from Alberta may be directed to the EUB's Economics Group at (403) 297-3916.

Failure to report under a gas removal permit or a contravention of the terms of a permit will result in the EUB taking enforcement action in accordance with EUB *Directive 019: EUB Compliance Assurance—Enforcement*.

## 6.5 Requirements for an Application for a Short-Term Gas Removal Permit (file 3 copies, with a completed Schedule 1 attached as the first pages of each copy of the application)

| Requirements | Comments |
|---|---|
| 1) Short-Term Gas Removal Application form | You should file your application for a short-term gas removal permit at least one month prior to the desired effective date of the permit.<br><br>Schedule 1 of this directive must be attached as the first two pages of your application. Sections 1 and 3 of the schedule must be filled out. The words "not applicable" may be placed beside Sections 2 and 4 of Schedule 1.<br><br>The remainder of the application is the Short-Term Gas Removal Application form. This form must be used to request a new gas removal permit or an amendment to an existing gas removal permit. The EUB will accept an application only if it is filed using the form.<br><br>An applicant is not required to give notification to any party or advertise its intent to apply for a new short-term gas removal permit or for an amendment to an existing permit. |
| 2) Part A (for a new permit) | Complete Part A of the form if you are applying for a new permit. If you are applying for an amendment to an existing permit, leave Part A blank.<br><br>The volume of natural gas proposed for removal from Alberta entered on the application form in Part A must be expressed as the total volume in $m^3$ proposed for removal from Alberta over the entire term of the permit. This volume must not be expressed as a daily or annual volume. The maximum volume that may be removed under a short-term permit, including amendments, is 3 billion $m^3$.<br><br>The maximum term for a short-term gas removal permit is two years (e.g., from November 1, 2006, to October 31, 2008). A permit may be made effective on the date it is issued or at some future date. However, the |

| Requirements | Comments |
|---|---|
| | EUB has no legislative authority to backdate a permit. |
| 3) Part B (for an amendment to an existing permit) | You may apply to amend the volume, term, and/or holder of an existing permit. Only that portion of the form pertaining to the desired amendment should be filled out; e.g., if you desire to amend only the term of a permit, leave the other portions of Part B blank.<br><br>If an existing short-term gas removal permit has authorized the removal of a volume of gas less than 3 billion $m^3$, the permit may be amended to increase the volume up to 3 billion $m^3$. However, if you have an existing short-term gas removal permit authorizing the removal of 3 billion $m^3$ of gas and you have removed that volume of gas before the permit termination date, you cannot amend the permit to take out additional volumes of gas, as the *GRPA* limits the volume allowed for removal under a short-term permit, including amendments to the permit, to 3 billion $m^3$. In this scenario, you must apply for a new permit.<br><br>The term of a permit may be rolled to allow a further maximum term of two years, but only if the volume of gas removed under the permit and all amendments does not exceed 3 billion $m^3$.<br><br>To request any change in the named permit holder, check the box in front of the words "Change of permit holder" and the box in front of the statement beginning "The proposed permit holder…."<br><br>It is very important to check this agreement box, as this confirms that the proposed permit holder is fully prepared to take on the obligations of the previous permit holder with respect to the permit. The EUB will not process a request to change the name on a permit unless this box has been checked. |
| 4) Part C (for the rescission of a permit) | Complete this portion of the form when you want to rescind an existing permit. Sometimes an existing permit should be |

| Requirements | Comments |
|---|---|
| | rescinded at the same time a new permit is requested. For example, if you are requesting a new permit because you have removed the maximum volume of gas allowable of 3 billion $m^3$ before the termination of a permit and you want to continue removing gas from Alberta, you must apply for a new permit using Part A of the form. However, you should also ask for the rescission of the current permit, because the permit will remain active until it either reaches its termination date or is rescinded, even though you can no longer use it because of the volume limitation. As long as a permit is active, you must continue filing reports for that permit; therefore, if the permit that you can no longer use is rescinded, you no longer need to file any reports for it. |

### 6.6 Requirements for an Application for a Long-Term Gas Removal Permit (file 3 copies, with a copy of a completed Schedule 1 attached as the first pages of each copy of the application)

| Requirements | Comments |
|---|---|
| 1) Long-Term Gas Removal Application form | Schedule 1 of this directive must be attached as the first two pages of your application. Sections 1 and 3 of the schedule must be filled out. The words "not applicable" may be placed beside Sections 2 and 4 of Schedule 1.<br><br>The remainder of the application is the Long-Term Gas Removal Application form. This form must be used to request a new gas removal permit or an amendment to an existing gas removal permit. The EUB will accept an application only if it is filed using the form.<br><br>An applicant is not required to give notification to any party or advertise its intent to apply for a long-term gas removal permit or for an amendment to an existing permit. |
| 2) Change of permit holder | To request any change in the named permit holder, check the box in front of the words "Change of permit holder" and the box in front of the statement beginning "The proposed permit holder…." |

| Requirements | Comments |
|---|---|
| | It is very important to check this agreement box, as this confirms that the proposed permit holder is fully prepared to take on the obligations of the previous permit holder with respect to the permit. The EUB will not process a request to change the name on a permit unless this box has been checked. |
| 3) Permit(s) No. to be rescinded | Complete this portion of the form only when you want to rescind an existing permit; otherwise, leave it blank. |
| 4a) Total volume of gas proposed for removal | If you wish to amend an existing long-term gas removal permit to add a new market with an associated new volume, fill out the "Existing volume authorized" line to reflect the volume currently authorized for removal under the existing permit. The "Proposed volume authorized" line should reflect the existing volume authorized plus the new volume to be added.<br><br>The volume of natural gas proposed for removal from Alberta must be expressed as the total volume in $m^3$ proposed for removal from Alberta over the entire term of the permit. This volume must not be expressed as a daily or annual volume. |
| 4b) Gas required for fuel to transport gas from Alberta | A description of how fuel gas has been accounted for is required. Normally, such gas would be accounted for in the new volumes of gas to be removed from Alberta entered on the "Proposed volume authorized" line. |
| 5) Term of permit | If you wish to amend an existing long-term gas removal permit to add a new market with an associated new volume and the existing permit term covers the term of the new sale, fill out the "Existing term and commencement date" line on the form. Fill in the "Proposed term and commencement date" line only if the term of the existing permit does not accommodate the new market.<br><br>If you are applying for a new permit, leave the "Existing term and commencement date" line |

| Requirements | Comments |
|---|---|
| | blank and only fill in the "Proposed term and commencement date" line.<br><br>As discussed in *Report 87-A: Gas Supply Protection for Alberta*, the EUB normally grants permits with a maximum term of 15 years, except in special circumstances. Therefore, if the proposed term is greater than 15 years, you must attach a discussion to your application describing how the circumstances justify the requested term, including an indication as to whether the proposed gas removals could proceed under the 15-year permit and if not, why not.<br><br>A permit may be made effective on the date it is issued or at some future date. However, the EUB has no legislative authority to backdate a permit. |
| 6) Name of proposed market(s), and the location and type of end-use customer(s) to be served under the permit | The name of the proposed market is the company to which the gas would initially be sold, as well as the names of any other companies that would acquire the gas prior to the final sale of the gas to the end-use customer. The location of the end-use customer is province(s) in Canada and/or or state(s) in the United States. The type of end-use customer could be industrial, commercial, residential, and electrical generation markets. |
| 7) Are arrangements in place for transporting the applied-for gas from the Alberta receipt point(s) to the intended end-use customer(s)? | If all transportation arrangements are in place, check the Yes box, and proceed to the next item.<br><br>However, if some or all of the transportation arrangements are not in place, check the No box, and explain what arrangements have been made and when it is anticipated that any new facilities required would be completed. Name the pipelines ultimately leading to the end-use market, and state what has been done to ensure that transportation arrangements will be in place. While transportation arrangements do not have to be complete in order to obtain a long-term gas removal application, steps should have been taken to acquire them. |

| Requirements | Comments |
|---|---|
| 8) Provide a summary of the pricing arrangements and how they were determined for the applied-for gas. Comment on any provisions to ensure that prices continue to reflect market conditions throughout the term of the permit. | The EUB does not require specific price information; however, the method of determining the price reflects whether such arrangements are in the public interest of Albertans. The EUB considers prices that adapt to constantly changing conditions and reflect a fair market value throughout the term of a permit regardless of the absolute market price to be in the public interest. |
| 9) Discuss how the applied-for removal of gas would be in the Alberta public interest. | This should be a general discussion on provincial public interest matters. |
| 10) Attach a table in the required format of the lands/zones that would supply the permit or amended permit, including<br>• the legal description of all of the lands involved,<br>• the zone or zones under your company's control for the lands in question, and<br>• the working interest ownership under your company's control for the lands/zones. | The EUB's policy is that a party holding a long-term permit must have sufficient gas reserves under control to supply the entire requested volume of the permit.<br><br>You must supply a list of lands and zones that will supply the requested permit. Typically, a company files one corporate reserves pool (CRP) with the EUB that lists the lands and zones that supply all of its EUB permits. To simplify this step of the application process, an electronic file of the CRP should be set up with the EUB prior to filing a long-term gas removal application. To obtain the specific format required for the CRP to be filed, contact the EUB's Business Operations and Development Group at (403) 297-2884.<br><br>After setting up a CRP with the EUB, request an EUB Reserves Under Control Table that lists the volume of gas reserves that the EUB recognizes for the specific land, zone, and working interest information provided.<br><br>Review this table carefully. If you disagree with the gas volumes listed on the EUB table associated with a specific section or note that no volumes have been listed for a section, you may request that the EUB review the reserves associated with the specific section. This may be done by completing the form EG-31(b)-83-1, included in Appendix H.<br><br>Attach appropriate isopach maps and supporting information to the form. You should have the results of any requests made in this |

| Requirements | Comments |
|---|---|
| | regard on a revised EUB Reserves Under Control Table prior to filing any long- term gas removal application.<br><br>If you already have filed with the EUB a CPR that is serving a permit and you are applying to amend an existing long-term permit to add a new market, the CRP must have been updated within the last calendar year.<br><br>Attach the EUB Reserves Under Control Table to the application. This table must contain up-to-date data and have been produced shortly before the filing of the long-term gas removal application. The table will serve as a public record of the location of the lands that will supply the applied-for gas removal. |
| 11) Attach a summary of the total gas reserves volume associated with the lands serving the proposed permit, together with a list of all commitments that would be served by the reserves portfolio involved, including<br>• the proposed permit,<br>• other permits (specify the number of each existing permit, as well as remaining authorized commitment),<br>• intra-Alberta commitments (such as industrial, commercial, or residential contracts or corporate warranties to other companies), and<br>• any other commitments. | The adjusted total gas volume listed on the EUB Reserves Under Control Table noted in item 10 is the volume that the EUB will use in determining whether you have sufficient gas reserves under control to supply the proposed gas removal. The EUB will compare the total volume noted on the table against the existing obligations you have for the gas in the CRP. |

### 6.7 Requirements for an Application for a Short-Term Ethane Removal Permit (file 3 copies, with a copy of a completed Schedule 1 attached as the first pages of each copy of the application)

| Requirements | Comments |
|---|---|
| 1) Short-Term Ethane Removal Application form | Schedule 1 of this directive must be attached as the first 2 pages of your application. Sections 1 and 3 of the schedule must be filled out. The words "not applicable" may be placed beside Sections 2 and 4 of Schedule 1. |

| Requirements | Comments |
|---|---|
| | The remainder of the application is the Short-Term Ethane Removal Application form. This form must be used to request a new ethane removal permit or an amendment to an existing ethane removal permit. The EUB will accept an application only if it is filed using the form.<br><br>An applicant is not required to give notification to any party or advertise its intent to apply for a short-term ethane removal permit or for an amendment to an existing permit. |
| 2) Change of permit holder | To request any change in the named permit holder, check the box in front of the words "Change of permit holder" and the box in front of the statement beginning "The proposed permit holder…."<br><br>It is very important to check this agreement box, as this confirms that the proposed permit holder is fully prepared to take on the obligations of the previous permit holder with respect to the permit. The EUB will not process a request to change the name on a permit unless this box has been checked. |
| 3) Permit(s) to be rescinded | Complete this portion of the form only when you want to rescind an existing permit; otherwise, leave it blank. |
| 4) Total volume of ethane proposed for removal | If you are applying for a new ethane removal permit, fill out the "Proposed volume authorized" line. The volume of ethane proposed for removal from Alberta must be expressed as the total volume in $m^3$ proposed for removal from Alberta over the entire term of the permit. This volume must not be expressed as a daily or annual volume. The maximum volume that may be removed under a short-term permit, including amendments, is 3 billion $m^3$.<br><br>If an existing short-term ethane removal permit has authorized the removal of a volume of gas less than 3 billion $m^3$, the permit may |

| Requirements | Comments |
|---|---|
| | be amended to increase the volume up to 3 billion $m^3$. However, if you have an existing short-term ethane removal permit authorizing the removal of 3 billion $m^3$ of gas and you have removed that volume of gas before the permit termination date, you may not amend the permit to take out additional volumes of ethane; the *GRPA* limits the volume allowed for removal under a short-term permit, including amendments to the permit, to 3 billion $m^3$. In this scenario, you must apply for a new permit.<br><br>To request an amendment of an existing ethane removal permit, fill in both the "Existing volume authorized" and "Proposed volume authorized" lines. |
| 5) Term of permit | The maximum term for a short-term ethane removal permit is two years (e.g., from November 1, 2006, to October 31, 2008).<br><br>If you are applying for a new permit, fill out the line for "Proposed term and commencement date." For example, you may request a two-year term commencing November 1, 2006. Leave the "Existing term and commencement date" line blank.<br><br>The term of an existing permit may be rolled by an amendment to the permit to allow a further maximum term of two years, but only if the volume of ethane removed under the permit and all amendments does not exceed 3 billion $m^3$. If you want to amend a permit to roll the term, fill in both the "Existing term and commencement date" and the "Proposed term and commencement date" lines.<br><br>A permit or an amendment to a permit may be made effective on the date it is issued or at some future date. However, the EUB has no legislative authority to backdate a permit or an amendment to a permit. |
| 6) Name of proposed market(s), and location and type of end-use customer to be served under the permit | The name of the proposed market is the company to which the ethane would initially be sold, as well as the names of any other companies that would acquire the ethane prior |

| Requirements | Comments |
|---|---|
| | to its final sale to the end-use customer. The location of the end-use customer is province(s) in Canada and/or or state(s) in the United States. |
| 7) Are transportation arrangements in place for transporting the applied-for gas from the Alberta receipt point(s) to the intended end-use customer? | If all transportation arrangements are in place, check the Yes box, and proceed to the next item on the form.<br><br>However, if some or all of the transportation arrangements are not in place, check the No box, and explain what arrangements you have made and when you anticipate that any new facilities required would be completed. Name the pipelines ultimately leading to the end-use market, and state what has been done to ensure that transportation arrangements will be in place. While transportation arrangements do not have to be complete in order to obtain a long-term gas removal application, steps should have been taken to acquire them. |
| 8) List the name and location (Legal Subdivision-Section-Township-Range, Meridian) of the facilities from which the ethane will be obtained | This includes gas processing and straddle plants. |

# Appendix A References

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| **How to Use This Directive** | Energy Resources Conservation Act,<br>Alberta Energy and Utilities Board Rules of Practice<br>Directive 019: EUB Compliance Assurance—Enforcement |
| **When to Use Schedule 1** | ST103: Field and Pool Code List<br>Energy Resources Conservation Act, Section 26 |
| **Notification Guidelines** | Energy Resources Conservation Act, Section 26<br>Directive 056: Energy Development Application Guide, Unit 1, Step 4: Emergency Response Plan |
| **Unit 1—Equity** | |
| **1.1 Rateable Take** | Oil and Gas Conservation Act, Section 36<br>Decision 85-5<br>Directive 032: Common Gas Purchaser and Related Matters, Board Policy and Views<br>Decision 91-8<br>Directive 040: Pressure and Deliverability Testing Oil and Gas Wells |
| **1.2 Common Purchaser** | Oil and Gas Conservation Act, Sections 50, 51, 55, and 56<br>Directive 32: Common Gas Purchaser and Related Matters, Board Policy and Views<br>Decision 91-8 |
| **1.3 Common Carrier** | Oil and Gas Conservation Act, Sections 48, 55, and 56<br>Directive 032: Common Gas Purchaser and Related Matters, Board Policy and Views<br>Decision 91-8<br>Decision 2006-021<br>JP-05: A Recommended Practice for the Negotiation of Processing Fees |
| **1.4 Common Processor** | Oil and Gas Conservation Act, Sections 53, 55, and 56<br>Directive 32: Common Gas Purchaser and Related Matters, Board Policy and Views<br>Decision 91-8<br>Decision 2006-021<br>JP-05: A Recommended Practice for the Negotiation of Processing Fees |
| **1.5 Compulsory Pooling** | Oil and Gas Conservation Regulations, Section 5.005<br>Oil and Gas Conservation Act, Sections 80, 85, and 86<br>Examiner Report 91-6<br>Examiner Report 95-2 |

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| **1.6 Special Drilling Spacing Units (DSUs)** | |
| **Change in Target Area** | Oil and Gas Conservation Regulations, Section 4.040(1) |
| **Fractional Section** | Oil and Gas Conservation Regulations, Section 4.050(1) |
| **Reduced DSUs** | Oil and Gas Conservation Regulations, Section 4.030(3) |
| **Target Areas** | Oil and Gas Conservation Act, Section 79(4) |
| **Suspension of DSUs** | Oil and Gas Conservation Regulations, Section 5.190 |
| **Holding (Common Ownership)** | Oil and Gas Conservation Regulations, Section 1.020(2)(4) |
| **Unit 2—Conservation** | |
| **2.1 Enhanced Recovery Scheme** | Oil and Gas Conservation Act, Section 39(1)(a)<br>Directive 051: Injection and Disposal Wells<br>IL 94-13: Progress Report Requirements – Conventional Recovery Schemes<br>IL 96-2: Progress Report Requirements for Miscible Flood Schemes<br>GB 2000-8: Process Changes to Disposal Well Applications<br>Bulletin 2004-16: Chances to Enhanced Oil Recovery Application Requirements and Review Process<br>Bulletin 2004-30: Directive 065: Resources Applications for Conventional Oil and Gas Reservoirs Enhanced Recovery Scheme—Application Changes Application Form, Requirements, and Process |
| **2.2 Enhanced Oil Recovery Project** | *Rescinded* |
| **2.3 Enhanced Recovery Recognition and Good Production Practice** | *Rescinded* |
| **2.4 Concurrent Production** | Oil and Gas Conservation Act, Section 39(1)(e)<br>Directive 060: Upstream Petroleum Industry Flaring Guide |
| **Unit 3—Production Control** | |
| **3.1 Commingled Production** | Oil and Gas Conservation Regulations, Sections 3.050 and 3.060<br>ID 99-1: Gas/Bitumen Production in Oil Sands Areas—Application, Notification, and Drilling Requirements |
| **3.3 Good Production Practice (Primary Pools)** | Oil and Gas Conservation Regulations, Section 10.060<br>Monthly MRL Order<br>Directive 060: Upstream Petroleum Industry Flaring Guide<br>Directive 007-1: Allowables Handbook<br>ID 99-2: Revised Policy on Administration of Oil MRLs and Overproduction |
| **3.4 GOR Penalty Relief** | Oil and Gas Conservation Regulations, Section 10.060 |
| **3.5 Special MRL** | Oil and Gas Conservation Regulations, Section 10.060 |

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|---|---|
| **3.6 Gas Allowable** | Oil and Gas Conservation Regulations, Sections 4.050, 4.070, 10.095, and 10.300<br>ID 94-2: Revisions to Oil and Gas Well Spacing Administration<br>ID 94-5: Consolidation of Regulations for Off-Target Penalty Factor Determination<br>IL 85-10: Maximum Daily Rate of Production for Gas Wells |
| **Unit 4—Disposal/Storage** | |
| **4.1 Class I-IV Disposal** | Oil and Gas Conservation Act, Sections 39(1)(c) and 39(1)(d)<br>Directive 051: Injection and Disposal Wells<br>Directive 056: Energy and Development Application Guide<br>Directive 058: Oilfield Waste Management Requirements for the Upstream Petroleum Industry<br>GB 2000-8: Process Changes to Disposal Well Applications |
| **4.2 Acid Gas Disposal** | Oil and Gas Conservation Act, Section 39(1)(d)<br>Directive 051: Injection and Disposal Wells<br>GB 2000-8: Process Changes to Disposal Well Applications |
| **4.3 Underground Gas Storage** | Oil and Gas Conservation Act, Section 39(1)(b)<br>Directive 051: Injection and Disposal Wells |
| **Unit 5—Corporate Changes** | |
| **5.1 Change of Name of Approval Holder** | Oil and Gas Conservation Regulations, Section 15.080 |
| **5.2 Change of Approval Holder** | Oil and Gas Conservation Regulations, Section 15.080 |
| **Unit 6—Gas and Ethane Removal** | Report 87-A: Gas Supply Protection for Alberta<br>Gas Resources Preservation Act, Section 2<br>ST48: Alberta Gas Removal and Related Applications<br>Bulletin 2006-42: Gas Removal Data System Compliance Process<br>Directive 019: EUB Compliance Assurance—Enforcement |

To obtain current EUB documents, visit the EUB Web site (www.eub.ca) or contact EUB Customer Contact Centre at (403) 297-8311 or by fax at (403) 297-7041.

## Appendix B Notification Templates

- Company-to-Company Notification Template
- Well Spacing Application Notification Templates
- Sample Notice Letters for Commingling Using the DE or SD Process

## Sample Template of Company-to-Company Notification

***(use for most application types except for well spacing applications)***

[Date]

[Offset Company]
[Address]

Attention: [Offset Owner]

Dear [Sir/Madam]:

Application for [type of application]
[List wells or pool]

[Company X] proposes to apply to the Alberta Energy and Utilities Board (EUB/Board) for approval to [describe the application]. A copy of the proposed application is enclosed. If you have questions about this application, do not hesitate to contact the undersigned at [telephone number]. If you have any concerns respecting the potential for the application to affect your interest, send a letter to me by fax to [facsimile number], by mail to the letterhead address, or by e-mail to [e-mail address] stating your concerns.

If you do not respond to this letter on or before [date—at least 15 working days from the date of this letter], we will assume that you have no objections to the proposed application and the EUB will process the application without further contact with you.

The EUB application process is a public process, and all documents filed with the EUB will be placed on the public record unless otherwise authorized by the Board in accordance with Section 12 of the *Alberta Energy and Utilities Board Rules of Practice*, *Alberta Energy and Utilities Board Act*.

Yours truly,

[Company]

## Notification Template for Well Spacing Applications
## Lessees and Unleased Freehold and Crown Lessors

[Date]

[Mineral Owner]
[Address]

Dear [Sir/Madam]:

**[APPLICANT NAME]**
**[SPECIAL [GAS/OIL] WELL SPACING]**
**[FIELD]**
**[FORMATION]**
**[SECTION(S)]**

[Applicant/Consultant on behalf of Applicant] will be applying to the Alberta Energy and Utilities Board (EUB/Board) pursuant to [section] of the *Oil and Gas Conservation Act* [and/or] [section] of the *Oil and Gas Conservation Regulations* to change the subsurface well spacing for the production of [gas/oil] from the [formation(s)] in the noted lands [list lands in the above title *and/or* provide attachment/map]. EUB *Directive 065: Resources Applications for Conventional Oil and Gas Reservoirs* requires that all mineral owners within the applied-for formation in the area of application and one (1) drilling spacing unit (DSU) surrounding the area of application receive notification of a well spacing application.

[Applicant/Consultant on behalf of Applicant] proposes that within the area of application, the existing [gas/oil] well spacing regulations will be changed from [the current spacing in place] to the following:

[Terms of Special Spacing]

*Example: Holding*

- A producing well shall be at least [X] metres from the boundaries of the holding.
- There shall be a maximum of [X] wells per pool per [DSU size].
- A producing well shall be at least [X] metres from other wells producing from the same pool. (Only applicable if requesting an interwell distance.)

*Example: Reduced Well Spacing*

- The purpose is to establish a drilling spacing unit of [DSU size] with target areas being [target area(s)] for the production of [oil or gas] in [applied-for formation] in [section(s)].

[Brief Discussion of Reason for Application]

Any concerns and/or questions regarding this application are to be directed to [applicant contact person and phone number], or you may send your concerns in writing to [applicant's address] or by fax or e-mail within 15 working days from the date of this letter.

In the absence of a response on or before [date—at least 15 working days from the date of this letter], we will proceed to file the application with the EUB for processing.

Should you have any concerns and/or objections, [Applicant] will discuss your concerns with you. Should your concerns remain unresolved, your concerns will be included as a submission to the application when filed with the EUB.

The EUB application process is a public process, and all documents filed with the EUB will be placed on the public record unless otherwise authorized by the Board in accordance with Section 12 of the *Alberta Energy and Utilities Board Rules of Practice*, *Alberta Energy and Utilities Board Act*.

After the application has been registered with the EUB, copies may be obtained by contacting the undersigned or may be viewed electronically on the EUB Web site at https://www3.eub.gov.ab.ca/eub/dds/iar_query/FindApplications.aspx .

Any questions regarding EUB process should be directed to the EUB Customer Contact Centre at (403) 297-8311.

Yours truly,

[Applicant]

## Notification Template for Well Spacing Applications
## Surface Owner/Occupant

[Date]
[Surface Owner/Occupant]
[Address]

Dear [Sir/Madam]:

**[APPLICANT NAME]**
**[SPECIAL [GAS/OIL] WELL SPACING]**
**[FIELD]**
**[FORMATION]**
**[SECTION(S)]**

[Applicant/Consultant on behalf of Applicant] will be applying to the Alberta Energy and Utilities Board (EUB/Board) pursuant to [section] of the *Oil and Gas Conservation Act* [and/or] [section] of the *Oil and Gas Conservation Regulations* to change the subsurface well spacing for the production of [gas/oil] from the [formation(s)] in the noted lands [list lands in the above title *and/or* provide attachment/map]. EUB *Directive 065: Resources Applications for Conventional Oil and Gas Reservoirs* requires that all surface owners/occupants in the area of application receive notification of a well spacing application.

[Applicant/Consultant on behalf of Applicant] proposes that within the area of application the existing [gas/oil] well spacing regulations will be changed from [the current spacing in place] to the following:

[Terms of Special Spacing]

*Example: Holding*

- A producing well shall be at least [X] metres from the boundaries of the holding.
- There shall be a maximum of [X] wells per pool per [DSU size].
- A producing well shall be at least [X] metres from other wells producing from the same pool. (Only applicable if requesting an interwell distance.)

*Example: Reduced well spacing*

- The purpose is to establish a drilling spacing unit of [DSU size], with target areas being [target area(s)] for the production of [oil or gas] in [applied-for formation] in [section(s)].

[Brief Discussion of Reason for Application]

Well spacing defines the number of subsurface drainage points necessary to improve/maximize recovery from a specified pool and/or to allow for the depletion of the resource in a reasonable period of time. A subsurface well spacing application does not determine access or the number and location of well sites, pipelines, or production facilities. These are matters to be negotiated

between the surface owner/occupant and [Applicant] and would normally be addressed through *Directive 056: Energy Development Applications and Schedules*.

[Brief description of surface development plans (e.g., pad drilling, utilization of existing lease sites, exact location of proposed drilling locations if known, applied-for zone is sweet/sour)]

Any concerns and/or questions regarding this application are to be directed to [applicant contact person and phone number], or you may send your concerns in writing to [applicant's address] or by fax or e-mail within 15 working days from the date of this letter.

In the absence of a response on or before [date—at least 15 working days from the date of this letter], we will proceed to file the application with the EUB for processing.

Should you have any concerns and/or objections, [Applicant] will discuss your concerns with you. Should your concerns remain unresolved, your concerns will be included as a submission to the application when filed with the EUB.

The EUB application process is a public process, and all documents filed with the EUB will be placed on the public record unless otherwise authorized by the Board in accordance with Section 12 of the *Alberta Energy and Utilities Board Rules of Practice*, *Alberta Energy and Utilities Board Act*.

After the application has been registered with the EUB, copies may be obtained by contacting the undersigned or may be viewed electronically on the EUB Web site at https://www3.eub.gov.ab.ca/eub/dds/iar_query/FindApplications.aspx .

Any questions regarding EUB process should be directed to the EUB Customer Contact Centre at (403) 297-8311.

Yours truly,

[Applicant]

## Notification Template for Well Spacing Applications
## Freehold Mineral Owner, Leased Minerals

[Date]
[Freehold mineral owner]
[Address]

Dear [Sir/Madam]:

**[APPLICANT NAME]**
**[SPECIAL [GAS/OIL] WELL SPACING]**
**[FIELD]**
**[FORMATION]**
**[SECTION(S)]**

[Applicant/Consultant on behalf of Applicant] will be applying to the Alberta Energy and Utilities Board (EUB/Board) pursuant to [section] of the *Oil and Gas Conservation Act* [and/or] [section] of the *Oil and Gas Conservation Regulations* to change the subsurface well spacing for the production of [gas/oil] from the [formation(s)] in the noted lands [list lands in the above title *and/or* provide attachment/map].

Records indicate that you are a Freehold mineral owner in [Lands] and your minerals are leased to [Company]. The EUB *Directive 065: Resources Applications for Conventional Oil and Gas Reservoirs* requires that all Freehold mineral owners within the applied-for formation in the area of application and one (1) drilling spacing unit (DSU) surrounding the area of application whose rights are leased receive notification of the subject application. The purpose of this notification is to provide you with information regarding potential development and to support ongoing dialogue between you and the lessee of your minerals.

[Applicant/Consultant on behalf of Applicant] proposes that within the area of application the existing [gas/oil] well spacing regulations will be changed from [the current spacing in place] to the following:

[Terms of Special Spacing]

*Example: Holding*

- A producing well shall be at least [X] metres from the boundaries of the holding.
- There shall be a maximum of [X] wells per pool per [DSU size].
- A producing well shall be at least [X] metres from other wells producing from the same pool. (Only applicable if requesting an interwell distance.)

*Example: Reduced Well Spacing*

- The purpose is to establish a drilling spacing unit of [DSU size], with target areas being [target area(s)] for the production of [oil or gas] in [applied-for formation] in [section(s)].

[Brief Discussion of Reason for Application]
The lessee of your minerals has also been notified of this application. Therefore, if you have any questions regarding the effect of this application on your minerals, please contact your lessee. If discussions between you and your lessee do not address your concerns, please provide your concerns in writing to the undersigned [applicant's address] or by fax or e-mail within 15 business days from the date of this letter. Your concerns will then be included as a submission to the application when filed with the EUB.

***OR***

As the applicant and the lessee of your offsetting minerals in [list lands], should you have questions regarding the effect of this application on your minerals, please contact [applicant contact person and phone number]; you may also send your concerns in writing to [applicant's address] or by fax or e-mail within 15 business days from the date of this letter. If discussions do not address your concerns, they will then be included as a submission to the application when filed with the EUB.

The EUB application process is a public process, and all documents filed with the EUB will be placed on the public record unless otherwise authorized by the Board in accordance with Section 12 of the *Alberta Energy and Utilities Board Rules of Practice*, *Alberta Energy and Utilities Board Act*.

After the application has been registered with the EUB, copies may be obtained by contacting the undersigned or may be viewed electronically on the EUB Web site at https://www3.eub.gov.ab.ca/eub/dds/iar_query/FindApplications.aspx .

Any questions regarding EUB process should be directed to the EUB Customer Contact Centre at (403) 297-8311.

Yours truly,

[Applicant]

## Sample Notice Letters for Commingling Using the DE or SD Process

### Sample Template of Company-to-Company Notification Letter

*To be used for notification of offsetting well licensees when commingling production using the DE or SD process*

[Date]

[Name]
[Address]
[Address]
[Address]

Attention:

Notification of commingling of gas/oil production
[Within a development entity OR using the self-declared process]
[UWI location]
[list intervals commingled] mKB

[Company Name] has used Alberta Energy and Utilities Board's [development entity OR self-declared process] to commence unsegregated production at the subject well in the intervals noted above. A requirement of the process necessitates that licensees of active wells in the section of interest and offsetting drilling spacing units be notified of the commencement or change to the production operations of any well using the [development entity OR self-declared process].

If you have any concerns or questions respecting the potential of unsegregated production to affect your interest, do not hesitate to contact the undersigned at [telephone number].

Yours truly,

[Contact Name]
[Company]

**Sample Template of Notification Letter to Be Used for Notifying Freehold Mineral Lessor *Prior* to Unsegregated Completion**

*To be used if the lessors are not common for the different strata within the wellbore planned for commingled production when using the DE or SD process*

[Date]

[Name]
[Address]
[Address]
[Address]

Attention:

Notification of commingling of gas/oil production
[Within a development entity OR using the self-declared process]
[UWI location]
[list intervals commingled] mKB

[Company Name] intends to used Alberta Energy and Utilities Board's [development entity OR self-declared process] to commence unsegregated production at the subject well in the intervals noted above. A requirement of the process necessitates that the Freehold mineral lessor(s) be notified if the lessors are not common for the different strata within the wellbore where commingling is proposed. The proposed commingling may affect the proportion of royalty assigned to your mineral holdings.

If you have any concerns or questions respecting the potential of unsegregated production to affect your interest, do not hesitate to contact the undersigned at [telephone number] within 15 working days from the date of this letter. If you do not respond within the time period noted, commingled production in the subject well will commence without further notice to you.

Yours truly,

[Contact Name]
[Company]

**Sample Template of Notification Letter to Be Used for Notifying Freehold Mineral Lessor *After* Unsegregated Completion Has Occurred**

*To be used to notify Freehold mineral lessors in the DSU of the commingled well and in offsetting DSUs when using the DE or SD process*

[Date]

[Name]
[Address]
[Address]
[Address]

Attention:

Notification of commingling of gas/oil production
[Within a development entity OR using the self-declared process]
[UWI location]
[list intervals commingled] mKB

[Company Name] has used the Alberta Energy and Utilities Board's [development entity OR self-declared process] to commence unsegregated production at the subject well in the intervals noted above. A requirement of the process necessitates that the Freehold mineral lessor(s) in the drilling spacing unit (DSU) of the commingled well and offsetting DSUs be notified when this process is used.

If you have any concerns or questions respecting the potential of unsegregated production to affect your interest, do not hesitate to contact the undersigned at [telephone number].

Yours truly,

[Contact Name]
[Company]

Appendix ?

EUB Alberta Energy and Utilities Board

# Application for Gas-Oil Ratio (GOR) Penalty Relief
## Form O-33

This form is to be used for smaller, less complex pools only. For detailed application requirements, see Directive 065, Unit 3: Production Control. A covering letter should state the reason GOR Penalty Relief is being requested and should be made on behalf of all operators in the pool.

**Company Name** _____ **On behalf of** (N/A ☐) _____

**Field and Pool Name** _____

**Gas Conservation**

Is solution gas currently being conserved? Yes ☐ No ☐

If gas conservation is planned for the future, identify the tie-in location and provide an implementation schedule.

_____

_____

_____

_____

If gas conservation is not considered feasible, include economic analysis showing capital costs, product price forecasts, total revenue (including liquids), payout time, and rate of return.

_____

_____

_____

_____

**Performance Characteristics**

Base MRL _____ $m^3/d/well$ Base GOR _____ $m^3/m^3$

| Well Location (Unique Well Identifier) | On Production Date | Cumulative Oil Production ($m^3$) | Capability ($m^3/d$) | GOR ($m^3/m^3$) |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Pool Reserves** (company's interpretation)

Area (hectares) _____

N ($10^3$ $m^3$) _____

$R_i$ _____

$_i$ N ($10^3$ $m^3$) _____

**Pressure Data**

$P_i$ _____ kPa(ga) $P_b$ _____ kPa(ga)

Last measured pressure _____ kPa(ga)

Date _____ Well _____

Where appropriate, attach material balance calculations.

(continued)

**Geology**

Discuss the potential for further pool development.

**Recompletion Potential**

Comment on recompletion potential or any measures taken to reduce gas production.

**Enhanced Recovery Potential**

**Impact on Primary Oil Recovery**

**Correlative Rights — Include an up-to-date map showing lessee and lessor ownership.**
(Note: If pool is multiwell and of mixed ownership, concurrence in writing is required from all operators.)

## Appendix D Transfer of Approval

**AGREEMENT TO TRANSFER APPROVAL(S)**

**BETWEEN** _____
(*company name*)
of the City of _____ in the Province of Alberta,

referred to as the **Transferor**, and _____ of the City
(*company name*)

of _____ in the Province of Alberta, referred to as the **Transferee**.

The **Transferor**, who is the holder of Board Approval No. _____, dated the ___day of ____ (or of the attached list of Board Approvals) for a _____ scheme,
(*type of scheme(s)*)
for good and valuable consideration, transfers to the **Transferee** the Approval(s) and all the **Transferor's** right and title in the Approval(s).

The **Transferee** agrees to the transfer of the Board Approval (or attached list of Board Approvals), acknowledges that it is aware of the details and conditions of the approved _____ scheme(s), and agrees to carry out the scheme(s) as approved.
(*type of scheme(s)*)

The address of the **Transferee** in Alberta is
_____

_____.

Dated at _____, on _____.
(*city*)

Signature:_____
Authorized Representative of Transferor

Signature:_____
Authorized Representative of Transferee

## Appendix E EUB Staff Contacts*

### UNIT 1 – EQUITY

| | | |
|---|---|---|
| 1.1 Rateable Take | Karine Fisher | (403) 297-8490 |
| 1.2 Common Purchaser | Karine Fisher | 297-8490 |
| 1.3 Common Carrier | Karine Fisher | 297-8490 |
| 1.4 Common Processor | Karine Fisher | 297-8490 |
| 1.5 Common Pooling | Karine Fisher | 297-8490 |
| 1.6 Special Drilling Spacing Units | Mary Anne Cairns | 297-8563 |

### UNIT 2 – CONSERVATION

| | | |
|---|---|---|
| 2.1 Enhanced Recovery Scheme | Tom Byrnes | 297-8479 |
| | Nancy Barnes | 297-3556 |
| 2.4 Concurrent Production | Nancy Barnes | 297-3556 |
| | Tom Byrnes | 297-8479 |
| 2.5 Pool Delineation and Ultimate Reserves | Tom Byrnes | 297-8479 |
| | Nancy Barnes | 297-3556 |

### UNIT 3 – PRODUCTION CONTROL

| | | |
|---|---|---|
| 3.1 Commingled Production | Karine Fisher | 297-8490 |
| | Hellen Groen | 297-3581 |
| 3.3 Good Production Practice | Nancy Barnes | 297-3556 |
| (Primary Depletion Pool) | Tom Byrnes | 297-8479 |
| 3.4 Gas-Oil Ratio Penalty Relief | Nancy Barnes | 297-3556 |
| | Tom Byrnes | 297-8479 |
| 3.5 Special Maximum Rate Limitation | Nancy Barnes | 297-3556 |
| | Tom Byrnes | 297-8479 |
| 3.6 Gas Allowable | Mary Anne Cairns | 297-8563 |

### UNIT 4 – DISPOSAL/STORAGE

| | | |
|---|---|---|
| 4.1 Class I–IV Disposal | Nancy Barnes | 297-3556 |
| 4.2 Acid Gas Disposal | Joe McIntosh | 297-8415 |
| 4.3 Underground Gas Storage | Joe McIntosh | 297-8415 |

### UNIT 5 – CORPORATE CHANGES

| | | |
|---|---|---|
| 5.1 Change in Name of Approval Holder | Christine Helmer | 297-8529 |
| 5.2 Change of Approval Holder | Christine Helmer | 297-8529 |

* All EUB e-mail addresses are standardized as follows:
firstname.lastname@gov.ab.ca

# Appendix F

## Enhanced Recovery (ER) Scheme Application Form

EUB Alberta Energy and Utilities Board

# Resources

## Enhanced Recovery (ER) Scheme

| DAY | MONTH | YEAR |
|---|---|---|
| | | |

APPLICANT'S REFERENCE

The applicant certifies that the information provided here and in all supporting documentation is correct and in accordance with all regulatory requirements or as directed by the Alberta Energy and Utilities Board.

## 1 APPLICATION TYPE

1. Type of ER scheme being proposed or amended:
   - ☐ Waterflood
   - ☐ Immiscible gas/Solvent flood
   - ☐ Miscible flood
   - ☐ Gas cycling
   - ☐ Other

2. Is this application for a new ER scheme or an amendment to an existing ER scheme approval? New ☐ Amendment ☐

   *If you select "New,"*
   - *proceed to Section 2; do not answer questions 3 and 4;*
   - *attachments required: Isopach Map, Well Log(s), Pressure Data, and Interpretation.*

3. What is the existing EUB approval number proposed for amendment? ☐☐☐☐☐

4. Type of amendment:
   - ☐ Add injection well location(s)
   - ☐ Amend approval area
   - ☐ Amend approval conditions
   - ☐ Scheme termination

   *If you select "Add injection well location(s)" only,*
   - *you must respond to questions in Sections 2, 3, and 5. Do not respond to questions in Section 4.*

   *If you select "Amend approval area" only,*
   - *you must respond to questions in Sections 2, 4, and 5. Do not respond to questions in Section 3.*

   *If you select "Add injection well location(s)" and "Amend approval area,"*
   - *you must respond to questions in Section 2, 3, 4, and 5.*

   *If you select "Amend approval conditions" only,*
   - *you must respond to questions in Section 2 and 5. Do not respond to questions in Sections 3 and 4.*

   *If you select "Scheme termination" only,*
   - *you must respond to questions in Section 2 and 5. Do not respond to questions in Sections 3 and 4 or question 18 in Section 5.*

## 2 OWNERSHIP AND NOTIFICATION INFORMATION

5. The primary applicant must
   a) be the proposed approval holder for a new scheme or the current approval holder for an existing scheme, and
   b) represent all well licensees in the proposed approval area.

   Have these requirements been met? Yes ☐ No ☐

   *If your answer is "No," you cannot submit this application.*

6. An ER scheme application cannot be submitted until notification of all well licensees has been completed in accordance with *Directive 65*.

   Has notification been completed in accordance with *Directive 65*? Yes ☐ No ☐

   *If your answer is "No," you cannot submit this application.*

7. Are there outstanding concerns from well licensees? Yes ☐ No ☐

   If yes, the Licensee Concerns attachment must be submitted as part of the application, in accordance with *Directive 65*.

## 3 PROPOSED INJECTION WELL LOCATIONS AND INJECTION INTERVALS

8. An ER scheme application cannot be submitted unless the proposed injection wells have been drilled.

   Have the proposed injection wells been drilled? Yes ☐ No ☐

   *If your answer is "No," you cannot submit this application.*

9. An ER scheme application cannot be submitted unless the source of the proposed injection fluid has been secured.

   Has the source of the proposed injection fluid been secured? Yes ☐ No ☐

   *If your answer is "No," you cannot submit this application.*

10. Provide the following for the proposed injection well locations:

| Well Licence Number | Unique Well Identifier (UWI) | | | | | | | Injection Interval (TVD mKB) | | Porosity Interval (TVD mKB) | | Fluid Interface (TVD mKB) if applicable | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | LE | LSD | SEC | TWP | RG | MER | ES | Top | Base | Top | Base | Gas/Oil | Oil/Water |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

11. What type of injection fluid, as identified by *Directive 051*, will be used?

- ☐ Class II – produced water (brine) without $H_2S$
- ☐ Class II – produced water (brine) with $H_2S$
- ☐ Class III – hydrocarbons or other gases without $H_2S$
- ☐ Class III – hydrocarbons or other gases with $H_2S$
- ☐ Class IV – non-saline water

*If you select "Class II – produced water (brine) without $H_2S$" only,*
- *do not respond to question 11a. Proceed to question 12.*

*If you select "Class III – hydrocarbons or other gases without $H_2S$" only,*
- *do not respond to question 11a, and*
- *proceed to question 12.*

*If you select "Class IV – non-saline water,"*
- *do not respond to question 11a, and*
- *proceed to question 12.*

11a. If an injection fluid contains $H_2S$ and an emergency response plan (ERP) is required, the EUB must ensure that an up-to-date ERP is in place prior to its decision on the application.

Is an EUB-approved ERP incorporating the proposed scheme in place? Yes ☐ No ☐

If no, a discussion addressing the status of the ERP must be included in the Application attachment, in accordance with *Directive 65*.

12. Will injection commence in all proposed injection wells within three months of receipt of approval? Yes ☐ No ☐

If no, a discussion addressing the anticipated commencement of injection and the reason for the delay must be included in the Application attachment, in accordance with *Directive 65*.

## 4 PROPOSED APPROVAL AREA

13. Is the entire proposed approval area within the EUB's Pool Order boundary for the subject pool? Yes ☐ No ☐

*If you select "No," you must respond to question 15.*

14. Does your interpretation of pool extent correspond to the EUB's Pool Order boundary for the subject pool? Yes ☐ No ☐

*If you select "No," you must respond to question 15.*

15. Is the difference in pool delineation interpretation pertinent to the proposed ER scheme, in accordance with *Directive 65*? Yes ☐ No ☐

Provide a discussion of the difference in pool delineation and the pertinence to the proposed ER scheme in the Application attachment, in accordance with *Directive 65*.

## 5 SCHEME DETAILS

16. Is the scheme area currently administered under good production practice (GPP)? Yes ☐ No ☐

17. Will produced gas from the ER scheme area be conserved, in accordance with *Directive 060* requirements? Yes ☐ No ☐

18. What is the proposed voidage replacement ratio (VRR), on a monthly basis, for the scheme? ☐

The EUB normally specifies a VRR of 1.0 to fully maintain reservoir pressure. If the VRR will not be 1.0, provide a technical justification in the Application attachment, in accordance with *Directive 65*.

19. Is or will any gas-cap gas be produced from the subject pool during the operation of the ER scheme? Yes ☐ No ☐

If yes, include a discussion on the potential for fluid migration into the gas cap in the Application attachment, in accordance with *Directive 65*.

*If you select "No," do not respond to questions 20, 20a, 20b, or 20c.*

20. Is gas-cap gas currently being produced from the scheme area? Yes ☐ No ☐

*If you select "No," do not respond to questions 20a, 20b, or 20c.*

20a. Has the appropriate concurrent production (CCP) approval been issued? Yes ☐ No ☐

*If you select "Yes," do not respond to questions 20b or 20c.*

20b. An application for CCP is required. Has an application for CCP been registered? Yes ☐ No ☐

*If you select "No," do not respond to question 20c.*

20c. If yes, provide the CCP application number. ☐

# Appendix G

## Gas and Ethane Removal Forms

EUB Alberta Energy and Utilities Board

# Short-Term Gas Removal Application

For permit to remove gas from Alberta in volumes of not more than 3 billion cubic metres ($m^3$) and for a term of not more than 2 years

This application is made under Section 2 of the *Gas Resources Preservation Act*.

Attach a completed Schedule 1 of EUB *Directive 065* to the front of your application for a new permit, for an amendment to an existing permit, or for the rescission of a permit.

For a new permit, complete Part A; for amendment of an existing permit, complete the appropriate portions of Part B; for the rescission of a permit, complete Part C. The EUB reserves the right to require an applicant to furnish additional information as it deems necessary to complete or supplement the application.

**PART A (for a new permit)**

Total volume of gas proposed for removal ($m^3$)_____

Proposed term of permit and commencement/termination dates_____

_____

**PART B (for an amendment to an existing permit; fill in only those portions for the desired amendment)**

Amendment requested for Permit No._____

Amendment is for

☐ Total authorized volume: Existing volume ($m^3$)_____

Proposed volume ($m^3$)_____

☐ Term: Existing term and commencement/termination dates _____

_____

_____

Proposed term and commencement/termination dates_____

_____

☐ Change of permit holder

Existing permit holder _____

Proposed permit holder _____

☐ The proposed permit holder agrees to assume and perform all of the obligations and duties of the existing permit holder under the permit.

☐ Other (describe in detail):

_____

_____

_____

_____

(continued)

**PART C (for the rescission of a permit)**

Permit(s) No. to be rescinded _____

**Reporting Requirements Associated with a Gas Removal Permit**

A monthly gas removal permit statement must be completed for each permit and filed electronically with the EUB by midnight on the 28th day of the month following the data month. The data month is the month when the gas was delivered. If the 28th is not a business day, the deadline falls on the next business day. The form must be completed and filed for each permit even if no gas has been removed. Detailed reporting instructions are set out in *Bulletin 2006-42: Gas Removal Data System Compliance Process*, available on the EUB Web site www.eub.ca. Questions on reporting may be directed to the EUB Economics Group at (403) 297-3916.

EUB Use Only

Permit No._____ Commencement Date_____

Volume_____ Expiry Date_____

EUB Alberta Energy and Utilities Board

# Long-Term Gas Removal Application

For permit to remove gas from Alberta in volumes greater than 3 billion cubic metres ($m^3$) or for terms greater than 2 years

This application is made under Section 2 of the *Gas Resources Preservation Act*.
Use this form for new permits and amendments of existing permits.

Attach a completed Schedule 1 of EUB *Directive 065* to the front of your application for a new permit, for an amendment to an existing permit, or for the rescission of a permit.

Remember to answer all questions and to add attachments if the space provided is inadequate. The EUB reserves the right to require an applicant to furnish additional information as it deems necessary to complete or supplement the application.

1. Request is for ☐ New Permit

   ☐ Amendment to Permit No. _____

2. ☐ Change of permit holder (amendment of permit)

   Existing permit holder _____

   Proposed permit holder _____

   ☐ The proposed permit holder agrees to assume and perform all of the obligations and duties of the existing permit holder under the permit.

3. Permit(s) No. to be rescinded (if applicable)_____

4. a) Total volume of gas proposed for removal:

   Existing volume authorized (if applicable) ($m^3$) _____

   Proposed volume authorized ($m^3$) _____

   b) Gas required for fuel to transport gas from Alberta: Does the proposed total authorized volume of gas include all fuel needed to transport the gas from the Alberta border to the intended market(s)?

   ☐ Yes ☐ No

   If No, how would such fuel gas be accounted for? (Any gas, including fuel gas, removed from Alberta must be authorized by and reported under a gas removal permit.)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(continued)

5. Term of permit

Existing term and commencement date (if applicable) _____

_____

Proposed term and commencement date _____

_____

If the proposed term is greater than 15 years, attach a discussion describing how the circumstances relating to the sales contract involved could be considered as special ones that would justify the requested term, including an indication as to whether the proposed gas removals could proceed under a 15-year permit and, if not, why not.

6. Name of proposed market(s), and the location and type of end-use customer(s) to be served under the permit

_____

_____

_____

_____

_____

_____

_____

_____

_____

7. Are arrangements in place for transporting the applied-for gas from the Alberta receipt point(s) to the intended end-use customer(s)?

☐ Yes ☐ No

If No, describe the transportation arrangements involved, including comments on when you anticipate that any new facilities to be built would be completed.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(continued)

8. Provide a summary of the pricing arrangements and how they were determined for the applied-for gas. Comment on any provisions to ensure that prices continue to reflect market conditions throughout the term of the permit.

9. Discuss how the applied-for removal of gas would be in the Alberta public interest.

(continued)

10. Attach a table in the required format (described in *Directive 065: Resources Applications for Conventional Oil and Gas Reservoirs*) of the lands/zones that would supply the permit or amended permit, including
    - the legal description of all the lands involved,
    - the zone or zones under the applicant's control for the lands in question, and
    - the working interest ownership under the applicant's control for the lands/zones.

11. Attach a summary of the total gas reserves volume associated with the lands serving the proposed permit, together with a list of all commitments that would be served by the reserves portfolio involved, including the proposed permit and other permits (specify the number of each existing permit, as well as remaining authorized commitment), intra-Alberta commitments (such as industrial, commercial, or residential contracts or corporate warranties to other companies), and any other commitments.

    Total gas reserves volume associated with the lands serving the proposed permit: _____ $m^3$

    Commitments to be served by the reserves portfolio involved:

| Permit No. or other commitment (describe) | Total volume of commitment ($m^3$) |
|---|---|
| | |
| | |
| | |
| | |
| | |
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| | |
| | |
| | |

**Reporting Requirements Associated with a Gas Removal Permit**

A monthly gas removal permit statement must be completed for each permit and filed electronically with the EUB by midnight on the 28th day of the month following the data month. The data month is the month when the gas is delivered. If the 28th is not a business day, the deadline falls on the next business day. The form must be completed and filed for each permit even if no gas has been removed. Detailed reporting instructions are set out in *Bulletin 2006-42: Gas Removal Data System Compliance Process*, available on the EUB Web site www.eub.ca. Questions on reporting may be directed to the EUB Economics Group at (403) 297-3916.

EUB Use Only

Permit No._____ Commencement Date_____

Volume_____ Expiry Date_____

EUB Alberta Energy and Utilities Board

# Short-Term Ethane Removal Application

For permit to remove ethane from Alberta in volumes less than 3 billion cubic metres ($m^3$) and for a term of not more than 2 years

This application is made under Section 2 of the *Gas Resources Preservation Act*.
Use this form for new permits and amendments of existing permits.

Attach a completed Schedule 1 of EUB *Directive 065* to the front of your application for a new permit, for an amendment to an existing permit, or for the rescission of a permit.

Remember to answer all questions and to add attachments if the space provided is inadequate. The EUB reserves the right to require an applicant to furnish additional information as it deems necessary to complete or supplement the application.

1. Request is for ☐ New Permit

   ☐ Amendment to Permit No. _____

2. ☐ Change of permit holder (amendment of permit):

   Existing permit holder _____

   Proposed permit holder _____

   ☐ The proposed permit holder agrees to assume and perform all of the obligations and duties of the existing permit holder under the permit.

3. Permit(s) No. to be rescinded (if applicable) _____

4. Total volume of ethane proposed for removal:

   Existing volume authorized (if applicable) ($m^3$) _____

   Proposed volume authorized ($m^3$) _____

5. Term of permit

   Existing term and commencement date (if applicable) _____

   _____

   Proposed term and commencement date _____

   _____

(continued)

6. Name of proposed market(s) and location and type of end-use customer(s) to be served under the permit.

_____

_____

_____

7. Are arrangements in place for transporting the applied-for ethane from the Alberta receipt point(s) to the intended end-use customer(s)?

☐ Yes ☐ No

If No, describe the transportation arrangements involved, including comments on when it is anticipated that any new facilities to be built would be completed.

_____

_____

_____

_____

_____

8. List the name and location (Legal Subdivision-Section-Township-Range, Meridian) of the facilities from which the ethane will be obtained.

_____

_____

_____

_____

_____

Reporting Requirements Associated with an Ethane Removal Permit

A monthly ethane removal permit statement must be completed for each permit and filed electronically with the EUB by midnight on the 28th day of the month following the data month. The data month is the month when the ethane is delivered. If the 28th is not a business day, the deadline falls on the next business day. The form must be completed and filed for each permit even if no ethane has been removed. Detailed reporting instructions are set out in *Bulletin 2006-42: Gas Removal Data System Compliance Process*, available on the EUB Web site www.eub.ca. Questions on reporting may be directed to the EUB Economics Department at (403) 297-3916.

EUB Use Only

Permit No._____ Commencement Date_____

Volume_____ Expiry Date_____

# Appendix H

## Gas Reserve Data Sheet

# EUB Alberta Energy and Utilities Board

# Gas Reserve Data Sheet

GAS VOLUMES AT 101.325 kPa AND 15°C

DATE YR/MO/DAY SUBMITTED

BY

FIELD

POOL

ZONE

TOP OF PAY K.B. S.L. POOL MEAN K.B.

TYPE WELL (LOCATION) W

BASE OF GAS PAY K.B. S.L. FORMATION DEPTH S.L.

TYPE OF RESERVE
- ☐ ASSOCIATED
- ☐ NONASSOCIATED
- ☐ SOLUTION

AVERAGE POROSITY SOURCE

CUTOFFS POROSITY SOURCE

PERMEABILITY mD

GAS SATURATION (Sg) = 1 - ($S_W$ + $S_O$)

$S_W$ SOURCE

$S_O$ SOURCE

INITIAL RESERVOIR PRESSURE, $P_i$ SOURCE

RESERVOIR TEMPERATURE SOURCE

Z $P_r$ SOURCE

$T_r$

GAS ANALYSIS $P_c$, kPa Tc, K

$P_c'$, kPa Tc', K

RELATIVE DENSITY SOURCE

RESERVOIR CONSTANT $(m^3/m^3) = Ø \times Sg \times \frac{Pi}{101.325} \times \frac{288.15}{T} \times \frac{1}{Z}$

RECOVERY FACTOR SOURCE

SURFACE LOSS FACTOR SOURCE

RAW GAS COMPOSITION IN MOLE FRACTIONS

| $N_2$ | $CO_2$ | $H_2S$ | $H_2$ | $H_e$ | $C_1$ | $C_2$ | $C_3$ | $iC_4$ | $nC_4$ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| $C_5$ | $C_6$ | $C_7$+ | SOURCE |
|---|---|---|---|
| | | | |

GROSS HEATING VALUE OF MARKETABLE GAS, $MJ/m^3$

SOURCE

STOIP, $10^3m^3 = 10AhØ(1-Sw)\frac{1}{B_{oi}}$

GOR SOURCE

$1/B_o$ SOURCE

ADDITIONAL COMMENTS

STOIP = STOCK TANK OIL IN PLACE

GOR = INITIAL DISSOLVED GAS-OIL RATIO

RESERVE ESTIMATE - INITIAL CONDITIONS

| | PROVEN | PROBABLE |
|---|---|---|
| G/W, metres SL | | |
| G/O, metres SL | | |
| AREA, hectares | | |
| h, metres | | |
| ROCK VOLUME, $10^4m^3$ | | |
| Ø, fraction | | |
| GAS SAT, fraction | | |
| $P_i$, k Pa | | |
| T, K | | |
| Z | | |
| RESERVOIR CONSTANT, $m^3/m^3$ | | |
| IGIP, $10^6m^3$ | | |
| RECOVERY FACTOR, fraction | | |
| PRODUCIBLE, $10^6m^3$ | | |
| SURFACE LOSS FACTOR, fraction | | |
| MARKETABLE, $10^6m^3$ | | |
| INITIAL ESTABLISHED MARKETABLE, $10^6m^3$ | | |
| MARKETABLE GAS PRODUCED, $10^6m^3$ | | |
| REMAINING ESTABLISHED MARKETABLE, $10^6m^3$ | | |
| REMAINING ESTABLISHED MARKETABLE UNDER CONTRACT, $10^6m^3$ | | |
| EFFECTIVE DATE, YR/MO/DAY | | |

SOLUTION GAS

| | |
|---|---|
| STOIP, $10^3m^3$ | |
| GOR, $m^3/m^3$ | |
| GIP, $10^6m^3$ | |
| RECOVERY FACTOR, fraction | |
| PRODUCIBLE, $10^6m^3$ | |
| SURFACE LOSS FACTOR, fraction | |
| MARKETABLE, $10^6m^3$ | |
| MARKETABLE GAS PRODUCED, $10^6m^3$ | |
| REMAINING ESTABLISHED MARKETABLE, $10^6m^3$ | |
| EFFECTIVE DATE YR/MO/DAY | |